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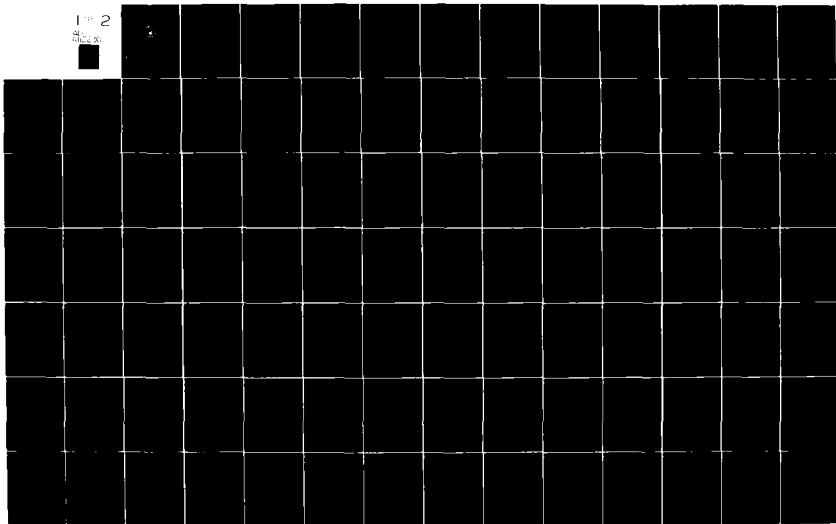   A BATTALION/DIVISION FISCAL CONTROL SYSTEM FOR TRAINING RESOURC--ETC(U)
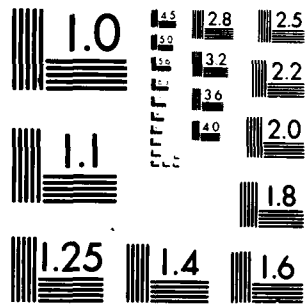   DEC 81   G R JAEHNE

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NAVAL POSTGRADUATE SCHOOL
Monterey, California

THESIS

A BATTALION/DIVISION FISCAL CONTROL SYSTEM
FOR TRAINING RESOURCE MANAGEMENT

by

Gordon R. Jaehne

December 1981

Thesis Advisors: Dan Boger
                                    Jeff Ellis

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20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

    This thesis examines the financial control structure for managing training resources utilized by U.S. Army Forces Command (FORSCOM). It reviews the current methodology for training resource management at FORSCOM, and provides an example of the conduct of budget forecasting and funding allocations. A fiscal model is developed to improve and simplify financial management of training resources within Army divisions and battalions.

20. ABSTRACT (Continued)

Data from a small scale test illustrate potential model data. Conclusions and recommendations are provided to determine if the model can be implemented in current Army budget procedures. This thesis not only attempts to focus upon current fund control system inadequacies, but also provides a clear review of the current methodology and presents a course of action to improve training resource management within Army units.

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A Battalion/Division Fiscal Control System
for
Training Resource Management

by

Gordon R. Jaehne
Captain, United States Army
B.S., United States Military Academy, 1973

Submitted in partial fulfillment of the
requirements for the degree of

MASTER OF SCIENCE IN MANAGEMENT

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3

ABSTRACT

This thesis examines the financial control structure
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TABLE OF CONTENTS

LIST OF FIGURES

ACKNOWLEDGEMENT

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I. INTRODUCTION

A. GENERAL

Interest continues to circulate within the legislative
and executive branches of government over the accounting and
control of funds within the Department of Defense. With an
annual budget reaching approximately $200+ billion dollars
for FY 82 alone, and with large projected increases in fol-
lowing years, management and control of these large sums of
dollars is an extremely sensitive political and social issue.
Accordingly, the service agencies of DOD have, although per-
haps reluctantly, begun processes of review to ensure their
fund management controls are effective. The Department of
Army (DA) has made resource management a top priority goal
for future fiscal years. The advancing scarcity of financial
and physical resources to support current levels of Army
operations and to enhance new future programs has called
for increased command interest and involvement in resource
management at all Army levels.

Considerable public attention has been attracted to the
large dollar figures bantered about within this Congress for
the armed services, with each service struggling to provide
"clear and adequate" models based on mission-related training
activities to project their funding needs. The Army has been
attempting to explain its activity levels within a framework

called the Battalion Training Day. Great efforts have been
expended trying to average the activities of multi-faceted
organizations scattered over vast geographical distances in
order to provide a single common denominator for evaluating
the mission-related activities of active Army units. It is
questionable that such a measure will ever be valid for this
purpose. Such efforts are likely to create only additional
reporting requirements.

To understand the complexity of this modeling task and
some of its habitual weaknesses one need only look at any
specific unit. Observation will quickly illustrate that the
unit's location, mission, people, local resources, and current
Army unit priority will create significantly different demands
for resources and consequent funding. Accordingly, system
controls for fund management should focus on each specific
unit and its resource management, rather than looking only
to one homogeneous model to evaluate all organizations. This
is necessary to ensure that any chosen resource control system
can acequately conduct and provide detailed financial projec-
tions and analysis to support requests for needed training
resources. The control system must be flexible, and if neces-
sary, allow tailoring to address particular unit needs, con-
cerns, and personalities of each command using it. With many
Army fiscal procedures consuming large volumes of time and
resources to support operations with questionable results,
individual resource control systems for battalions and
divisions are needed to address this concern.

B. CURRENT FINANCIAL MANAGEMENT STRUCTURE

The Army has a financial management system linking the
obligationary funds allotted to it from the Congressional
appropriations through OMB and DOD down to the actual unit
placing a demand for funds. This structure for controlling
the flow of funds has necessary checks and interfaces with
the funds' users to account for expenditures. To date,
however, resource management evaluations within financial
constraints are still generally ignored by the user. This
lack of a measure or yardstick to evaluate the Army's organ-
izational activities by relevant costs gave support to the
request for the Battalion Training Day denominator.

Today, Army operating funds are allocated through the
Army Chief of Staff, by the Comptroller of the Army (COA),
to the special operating agencies (SOA) and to the general
operating agencies (GOA) funded directly by Headquarters,
Department of Army. This allocation makes available a pre-
scribed amount of funds and is normally made quarterly. The
GOA's or Major Commands (MACOM) issue obligation authority
to their responsibility centers (i.e., installations) through
specific allotments. The total of the allotments issued to
the installations must not exceed the amount of allocations
received by the GOA and must be for the same time period.
This ties the funding to the specific appropriations gener-
ating the funding authority. The installation's authority
to incur obligations will be received on a funding document

(DA Form 1323--Funding Authorization Document (FAD)) spe-
cifying the appropriation and budget programs for which the
funds may be used. The FAD is the installation's approved
financial plan.

The installation's authorized funds are then debited to
accounts in the Standard Finance System (STANFINS). STANFINS
is the computer accounting system located on the installation
which maintains the "checkbook" for the authorized funds
(allotments) to be expended. The installation comptroller
monitors the expenditures of these funds which, in practice,
have become "ceilings" for the installation's expenditures.

Once the installation comptroller receives the FAD he
will suballocate commitment authority to his subaccount
holders or post departments (example: a division). This
commitment authority will identify the amount of funds these
departments can commit for expenditure. Commitment of funds
is also on a quarterly basis, and previous quarter's funds
can carry over into the succeeding quarter, except for the
fourth quarter of a fiscal year. The principal funding
these units receive is Operations and Maintenance, Army (OMA)
dollars. This funding supports the command operating targets
for the units.

At the division level within the active Army, management
of the commitment authority given by the installation com-
mander, through his comptroller, rests with the division
commander. He has a Division Financial Management office

which monitors his funding authority. The commitment
authority (dollars) is credited to the division Tactical
Unit Financial Management Information System (TUFMIS).
TUFMIS is the division's automated system for suballocating
funding commitment authority to its individual units (bat-
talions). Once funds are authorized to the tactical units
they become, in principal, "ceilings" for their operating
budgets. Although a proper term would be operating targets,
budget is used for ease of understanding. These funds are
principally for general supplies, building/construction
materials, and repair parts (class 2, 4, and 9 monies) and
become the battalion commander's financial resources to
manage. They comprise his budget outlays to support his
unit's activities.

Before examining some inherent weaknesses in the system,
it may be useful to observe how a battalion-sized unit's
expenditures impact upon the obligation authority of funds
monitored by the installation comptroller. The example
follows a request for a spare part for a tactical vehicle.
The battalion would first check its Prescribed Load List
(PLL) to see if the part is available. If the part is not
available, a DA Form 2765-1, request for parts issue, is
completed, keyed to a National Stock Number (NSN) identify-
ing each specific part. The 2765-1 is then passed to the
Division Material Maintenance Center (DMMC) which is the
division's stockage point. If its authorized stockage list

(ASL) does not have the part, the request goes to the In-
stallation Supply Division (ISD) which orders the part from
a National Inventory Control Point (NICP). Throughout this
period no expenditure of funds is credited to any account.
If the part was stocked at an earlier point and issued, the
request (2765-1) terminates and TUFMIS is credited with an
expenditure from within the Division Logistic System (DLOGS),
but no obligational funding has been credited. Simply, the
unit is utilizing previously paid stockages and doing internal
accounting.

Once a requisition is made to a NICP, whether originating
in a unit or to restock ASL's, funds will be credited to the
STANFINS account. This is accomplished by the Standard Army
Intermediate Level Systems (SAILS) located at the installa-
tion level, and is accomplished through an interface with
STANFINS. When the requisitioned part is received at the
ISD, SAILS is notified and the part is charged against the
appropriate allotment account in STANFINS. SAILS also moni-
tors the suballocations to the post's departments and signals
a credit entry against the appropriate department's commit-
ment funding account, such as TUFMIS. SAILS provides the
installation commander and his comptroller the automated
system to monitor expenditures of his funds as TUFMIS does
for the division commander.

C. THE PROBLEM

Although these procedures and reporting formats exist
to account for the expenditures and usages of resources
associated with unit activities, they principally are time
and accounting, not mission/training-requirement, oriented.
They fail to focus on the nature or level of the mission-
oriented activity exercised. As a result, the budget form-
ulation for future fiscal years and the supervision of an
active unit's budget are not currently allocating resources
by activities, but rather by periods.

Here enters the dilemma for reporting funding controls
at each command level within the Army. Faced with the ab-
sence of a common denominator to evaluate expenditures,
adjustments habitually result from "block" type cuts or
additions. These adjustments, which can originate from any
level, result in a funding shock-wave which will roll down
until it impacts upon the lowest level utilizing the funding.
Additions often provide opportunity for glut expenditures,
while reductions can result in reduced operations or even
possible expenditure stoppages. Examples are best witnessed
at the end of fiscal years. One year may illustrate funds
previously withheld suddenly released, requiring their ex-
penditure before 30 September and creating a "buy anything
that's available" attitude. Another year may find some funds
depleted prior to the completion of the current year due to
inflationary costs or mismanagement, requiring halts in any

further expenditures, some of which are possibly mission essential. Without a measured or controlled management of funding, unit activities will continually be disrupted.

D. THE BATTALION TRAINING MANAGEMENT SYSTEM

In 1975 the Army implemented a service-wide concept known as the Battalion Training Management System (BTMS). This program provides the framework for units to plan, program, execute, and evaluate operations. BTMS is the Army field concept of managing and evaluating training, and training resources. Although BTMS provides a logical and standardized approach to resource management, consideration of financial constraints is generally overlooked. Many commands do not understand how BTMS might help modify the impact funding disruptions have on unit activities. The typical line commander has been educated by his military experience to address the nature of the mission to be undertaken and give it ultimate consideration. Consequently, financial constraints are perceived to be "minor details" delegated to staff officers. The "can do" attitude which dominates most military thoughts has been directed to begin serious financial/resource management or face the loss of operational discretionary authority.

Before examining what, if any, adjustments or refinements can be expanded in the realm of financial management, it is necessary to understand the basic framework of BTMS itself. Prior to its inception in 1975, training of the Army's units

was envisioned as simply a command prerogative. It was understood that each commander, in conjunction with his commander's guidance, could and would develop an adequate training program to ensure that his unit was "combat ready." Unfortunately, neither the guidance nor commander could often ensure than an "adequate" program was developed. Although forecasting was meticulous and well conceived, reality saw the actual training deviating from planned activities on a daily basis. Additionally, the commanders of battalions and brigades often had been away from line assignments up to 8-10 years which created recognition and credibility gaps as they attempted to persuade their officers and NCO's to grasp their training philosophy and methods of execution. BTMS emerged as a methodology to plan and conduct an effective training program. It provides a stepwise approach to establish long and short range training calendars. However, the major concession BTMS brought was the concept of an implied contract between commanders. Once a unit training forecast was accepted by the chain of command, its proper execution was to be supported and expected by all involved to include the allocation of adequate resources.

BTMS advocates that the commander is the resource manager of his unit. In these early stages of execution, BTMS has *significantly improved* the organizational planning of unit activities based on timing and physical constraints, but financial considerations and management often are weak or

neglected entirely. Units like to develop grand and intri-
cate training programs and support activities. The desire
to do scuba diving in Hawaii or snow skiing in Alaska are a
couple of examples. Without question, all of these envisioned
activities would improve unit readiness or espirit, yet the
financial costs compared to available funding often finds
plans and reality far apart. A common practice utilized to
adjust funding shortfalls is to rank activities as funded or
unfunded. Training is forecasted for all activities and those
unfunded activities not later funded must be eliminated.
Under BTMS, this approach still leaves selection of many major
activities to nonparent headquarters, and the system retains
the tendency toward patchwork training.

A logical expansion of BTMS to encompass the necessary
financial considerations is the utilization of the flexible
budget concept. "The flexible budget is different from other
budgets. It does not confine itself to a single level of
activity, but rather is geared toward a range of activity.
Also, the flexible budget is not static in nature. A budget
can be constructed, even after the fact, to compare against
any level of activity and costs within a relevant range"
[Ref. 1, p. 348]. Currently, funding levels are perceived
as "ceilings" to expenditures, with a commander's successful
fiscal management evaluated against utilization of resources
to the specific "ceiling" provided. Conservation of fundings
is as unacceptable as overexpenditure. This is due to the

fear that future funding levels might become inadequate. Sadly, these financial planning targets often become sacred numbers to be obtained.

E. A QUESTION

Thus, a question develops. How can BTMS be refined to provide the simple budgetary analysis of unit resources for the activities programmed or executed? The answer lies in the amount of historical data already generated within the organizations. Unfortunately, that data often are not collected in a manner to provide easy reference. The major relevant costs which a commander has discretionary impact upon must be carefully and routinely supervised. Manual or automated systems could be developed to assemble the historical data associated with the unit activities. Simple calculations of past activity expenditures, averaged and retained, provides the commander with a ready, viable reference. As future, similar activities are planned, these cost estimates could help determine what future activities could be conducted and their corresponding costs. Additionally, current budgets can be monitored, comparing programmed costs to actual expenditures, allowing training adjustments to be planned and expected rather than spontaneous and disruptive. Regardless of the system utilized, it must be simple. Powerful and intricate computers or numerous laborious forms will only further burden the decision-making process occurring at the unit level.

Rather than creating a massive micro evaluation with ques-
tionable results, refinement of current procedures and
possible streamlined reporting may help satisfy the funding
management requirements and improve internal Army resource
management.

F. THESIS ORGANIZATION

This thesis will focus on the financial control structure
for managing training resources which is utilized by U.S. Army
Forces Command (FORSCOM). It reviews the current methodology
for training resource management at FORSCOM, providing an
example of budget forecasting and funding allocations within
an Army MACOM. A critique of the control structure is pro-
vided to highlight its strengths, weaknesses, opportunities
and threats. Next, two principal Army-sponsored programs,
related to training resource management currently being devel-
oped, are examined and discussed. Each program is discussed
in terms of a general overview, current status and fieldinr
projection, cost/benefit relationships, and problems needing
resolution. Following these program discussions, the thesis
introduces an alternative training resource management model,
highlighting its budget forecasting and fund allocation inter-
face with the Battalion Training Management System. The model
was developed to improve and simplify financial management of
training resources within Army divisions and battalions. The
proposed model was field tested with the Seventh Infantry

22

Division at Fort Ord, California. The test data generated are presented to illustrate sample model data. The findings are reviewed to determine if any aspects of the model can be implemented in current Army budget procedures. Finally, conclusions and recommendations are provided. This thesis attempts not only to focus upon the current fund control system inadequacies, but also to provide a clear review of the current methodology and to present a course of action to improve training resource management within Army units.

II. CURRENT METHODOLOGY FOR TRAINING RESOURCE MANAGEMENT

A. BUDGET SUBMISSIONS

1. Congressional Interest

To address the growing Congressional demands for detailed information, the Army continues to seek a common methodology to report on its operations. Its search is to improve both its financial control structure and its output measurement. "Output information is needed for two purposes: (1) to measure efficiency, which is the ratio of outputs to inputs (i.e., expenses); and (2) to measure effectiveness, which is the extent to which actual output corresponds to the organization's goals and objectives" [Ref. 2, p. 227]. Since the Army is a nonprofit organization, there is obviously an absence of a profit measure in monetary terms. Thus an adequate nonmonetary substitute is needed to measure its efficiency and effectiveness.

2. Installation Procedures

As in any organization, output measurement begins at the responsibility center level (installation). The current method used by FORSCOM installations to reflect outputs occurs through their Command Operating Budget (COB) submissions. In March and April prior to a new fiscal year, installations formulate and submit to FORSCOM their COB's utilizing detailed guidance. The input information of costs associated to the

training activities provides an initial identification as to the level of training output to be accomplished that year. Each installation explains in detail the training costs by training issue and training event category. These estimates become the installation inputs to the FORSCOM COB.

3. FORSCOM Procedures

As the installations' COB's are received at FORSCOM headquarters, consolidation begins immediately. FORSCOM must have its budget submission forwarded to Army headquarters by July. A budget timetable is shown below:

Internal to the Army: (COB submissions include upcoming FY and two outyear FY's)

April - Installations receive budget call

May - Installation COB prepared

June - FORSCOM COB prepared

July - FORSCOM COB forwarded to Army headquarters

October - Approved appropriation received, monies allotted to MACOM's

Congressional timetable:

15 Jan - President submits new FY budget to Congress

15 Mar - Budget Committees begin budget review

15 Apr - First Concurrent Resolution reported

15 May - Congress completes First Concurrent Resolution

15 Sep - Congress completes Second Concurrent Resolution

1 Oct - Budget approved, new FY begins

25

Once received at FORSCOM, the budget submission format begins
to aggregate costs across associated activities. Dollar
estimates are grouped in 42 program issues which comprise
the Operation and Maintenance Army (OMA) appropriation Pro-
gram 2 (General Purpose Forces) Mission costs. (Appendix A
displays the 42 P2 Mission funding issues.) At present the
appropriation framework does not allow corresponding activi-
ties to accompany funding requests up to Congress. Only cost
data associated with appropriation programs are reviewed by
agencies higher than a MACOM. Program activity levels are
not required by law to be reported at this time.

  4. Training Activity Reports

    FORSCOM provides information to Army headquarters
which attempts to highlight training activities and associ-
ated costs. FORSCOM claims that Schedule 40--Quantification
Data (Program 2, Mission) and its supporting documents, RSN
015-P2 Mission Issues by EOE (OMA), RSN 016-P2 Mission Issues
by Category of Training (OMA), and Schedule 40-1--Quantifica-
tion of P2 Mission Costs by Training Event Category, are used
as field input to all short and long range training resource
requests by HQ FORSCOM in support of the Planning, Programming,
Budgeting cycle. Training resources are justified by compar-
ing training requirements with training events that can be
purchased with available funds, and by comparing annual costs
accrued by like units. Workload data such as Battalion Days
(BD) and Battalion Equivalents (BE) are the common denominators

that are designed to provide equivalence to training event duration and organization size. [Ref. 3]

The workload factors BD and BE are defined as follows:

(1) <u>Battalion Day (BD)</u>--A calendar day or portion thereof (defined in increments of .5) during which a battalion or BE is engaged in a definite activity. A Battalion Training Day (BTD) is further defined as a battalion day of activity planned or accomplished for the primary purpose of furthering the unit's training program.

(2) <u>Battalion Equivalent (BE)</u>--A factor assigned to units smaller than a battalion. Battalions are divided into organic subunits--troops/companies/batteries, platoons and squad/crews. Each subunit is assigned a proportional battalion equivalent factor based upon the percent of the battalion represented by the subunit. A battalion of 5 companies, each with 4 platoons and 16 squads, would report BE's as follows:

Each company - .2 BE

Each platoon - .05 BE

Each squad - .01 BE

The data developed in these reports were intended to provide the basis to allocate funds to installations for their training levels and activities. However, FORSCOM's Deputy Chiefs of Staff of Operations and Comptrollership recognize that the current information is not sufficiently accurate to allocate training funds. The reports are useful

only as statistical arrays of installation data projected
into the 42 training issues for P2 Mission funds with their
associated training event categories. Appendix B is a de-
tailed explanation of five of the possible 42 training issues
and their associated training event categories. The informa-
tion required from each unit, later to be compiled into an
installation level input, is illustrated at Figure 2-1. The
FY 82 Training Budget Estimate must be completed in days and
dollars for each of the 42 training issues which apply to a
specific unit. Some training issues and training event cat-
egories do not apply to all units or installations. An example
of a completed FY 82 Training Budget Estimate for the training
issue, Training of Platoons and Companies, is shown in Figure
2-2. Appendix C provides definitions for the Training Budget
Estimate terms.

The reports require significant data collection.
Supplies and equipment worksheets must be completed for each
training event category at each location within each training
issue. However, the key in this system to obtain the neces-
sary supply and equipment estimates requires realistic esti-
mates of the miles/hours/rounds associated with the execution
of each training event. Use of unit records to determine
historical equipment usage is expected. This requires current
cost factors for each item of equipment in a unit. These fac-
tors are not habitually maintained and there is no simple
system currently present for doing so. An example of a

28

FY 8_ TRAINING BUDGET ESTIMATE

UNIT:
TRAINING ISSUE:

Location/Event Category	# of Days	Travel/TDY (Personnel)				$ Trans (Equipment)				$ Contr	$ Supl/ Equip	$ Total
		Air	Rail	Bus	Misc	Air	Rail	Truck	Misc			
Ft X												
Ft Y												
Ft Z												
Other												
Total Days/Dollars												

FIGURE 2-1

29

TABLE IV-8 TRAINING BUDGET ESTIMATE (FOR ONE TRAINING ISSUE)

UNIT: 1-1 Inf
TRAINING ISSUE: TRAINING OF PLATOONS AND COMPANIES

Location	Event Category	# of Days	$ Travel/TDY (Personnel)				$ Trans (Equipment)				$ Contra	$ Suppl/Equip	$ Total
			Air	Rail	Bus	Misc	Air	Rail	Truck	Misc			
Ft X	Contingency Mission Tng Plt ARTEP & Tng	2 28										10,556	10,556
Ft Y	Plt/Co ARTEP & Tng	25									500	53,016	53,016
Ft Z	Co EURE	2.5										4,598	4,598
Other Alaska Irwin Hawaii	Spec Envir (NWTC) Co Live Fire Co ARTEP/Tng	3 1 3.2	70,000 140,000	50,000 3,000			60,000					2,145 137,747 19,544	72,145 187,747 168,544
	Total Days/Dollars	54.7	210,000	53,000			60,000				500	227,606	497,106

FIGURE 2-2

partially completed FY 82 Training Supplies and Equipment

Worksheet for Training Event Category--Platoon and Company

ARTEP Training--is shown in Figure 2-3 (ARTEP: Army Readiness Training Exercise Program).

The creation of Schedules 40 and 40-1 has required installations to submit budgetary information in such detail that all information is generally meaningless. The detail required to develop the data described implies each number generated is relevant and factual. Unfortunately, the data are generated at unit levels by well-intended personnel often lacking the financial management skills now demanded by these reports. The command structure is relying upon units to capture and retain historical training data and to correlate it to costs. Neither the financial tools nor personal skills are currently adequate to ensure that the generated information is accurate, much less useful. Consequently, the reports presently fail to accurately project training activities and their associated costs.

B. FUND ALLOCATIONS

1. P2 Mission Funds

The allocation of funds for training activities for FORSCOM units originates from P2 Mission, OMA funding. As explained earlier, these funds have been categorized into 42 training issues for allotment control to the individual installation accounts. Five of the 42 issues provide the principal funding requirement (33 percent) for training activities

SAMPLE FY 8_ TRAINING SUPPLIES/EQUIPMENT WORKSHEET

UNIT: 1-1 Inf

EVENT CATEGORY: PLATOON ARTEP AND TRAINING (FT X)

W/H	Nomenclature	# to be used	Est mi/ rd/hr per item	Est Total mi/rd/hr	COST $ Pol (ml/rd/hr)	FACTORS Cl9 $ Cl9/hr	TOTAL Pol $	TOTAL COST Cl 9 $
55	Radio set AN/PRC 7?	30	200 hr	6000 hr	.02	1.47	120.00	8820.00
B7	Truck 2½T	8	100 mi	800 mi	.27	.80	216.00	640.00
3C	Truck ¼T	10	200 mi	2000 mi	.16	.22	320.00	440.00
						Total	656.00	9900.00
	EVENT CATEGORY: SPECIAL ENVIRONMENT (NWTC) ALASKA							
55	Radio Set AN/PRC 7?	6	240 hr	1440 hr	.02	1.47	28.00	2116.00
	EVENT CATEGORY: COMPANY ARTEP/TRAINING (HAWAII)							
55	Radio Set AN/PRC 7?	10	200 hr	2000 hr	.02	1.47	40.00	2940.00
8C	Truck 1¼T	2	350 mi	700 mi	.25	1.75	175.00	3580.00
B7	Truck 2½T	8	350 mi	2800 mi	.26	.17	728.00	476.00
68	Truck 4T	20	350 mi	7000 mi	.16	.22	120.00	1540.00
G8	Truck 5T	1	350 mi	350 mi	.34	.85	119.00	290.50
						Total	2182.00	17,362.50

FIGURE 2-3

at the installation. They support the resource demands generated from the units' BTMS activities. The five issues are:

Training of Individuals, Squads and Crews
Training of Platoons and Companies
Training of Battalions
Training of Brigades and Divisions
Force Sustainment or Garrison Operations

2. Mechanized Battalion Cost Equivalent (MBCE)

In response to the possible variations inherent in the budgetary submissions previously discussed, FORSCOM selected a new procedure to allocate training funds. The format is known as the Mechanized Battalion Cost Equivalent process (MBCE) which utilizes a perceived common cost factor between types of units. The numerical relationship was developed using cost figures from a document called the Army Force Planning Cost Handbook (AFPCH). The handbook lists approximately 100 different types of units with associated acquisition, recurring and indirect costs. The MBCE assumes that a proportional relationship exists between the listed recurring costs in the AFPCH. The MBCE uses the costs for units at ALO 1 (highest readiness posture). The Mechanized Infantry Battalion (MIB), being the most common unit in the force structure, was selected as the base unit and its cost was equated to 1. Each remaining type unit's recurring cost was factored against the MIB cost to determine its own relative cost factor. With each unit identified by cost factors in relation to the MIB, each installation is summed by type of

33

units with associated MBCE factors. The determined MBCE
factored sums measured against the FORSCOM MBCE sum becomes
each installation's training fund percentage. Once FORSCOM
receives its funding allocation for a new fiscal year, the
five listed issue allocations are summed and funds are dis-
tributed to each installation according to its determined
MBCE percentage. An example installation funding allocation
would be:

Problem: Determine installation X's training fund allotment
using MBCE.

Given: 1. FORSCOM FY 8_ training fund allotment is $200
million.

2. All FORSCOM Battalion Equivalents equal 100 BE's.

3. Installation X has 15 BE's.

Answer: 15/100 times 200 equals $30 million.

Consequently, the five issues serving as the principal source
of funds for each installation training budget are allocated
by numbers of type units, not by activity levels, conducted
by type unit.

The total funding in these five issues allocated to
FORSCOM was $251 million in FY 81 alone. This money was
proportioned among its 17 commands. Once the funding for
these five issues was determined, minor sensitivity analysis
was conducted based upon the previous year's funding alloca-
tion. The intent was to raise as many installations' funding
to at least last year's level as possible. The 37 remaining
P2 Mission training issues with a total funding requirement

34

of $469 million, were addressed and allocated by separate issue. As a result, approximately one-third of all P2 Mission funds, but 100 percent of a unit's training budget, was allocated by the MBCE methodology. This is a significant amount.

C. ANALYSIS

To explore the MBCE allocation methodology and any possible training intensity projections, a simple outline format will be utilized. The format will identify and critique the strengths, weaknesses, opportunities and threats of the current funding control structure and its output measurement within FORSCOM.

1. MBCE--A Financial Control System

The MBCE methodology appears to center on the credibility of two assumptions. First is the assumption that the relationship between recurring costs from the Army Force Planning Cost Handbook are relevant and proportional. Second, the assumption is made that the level of financial activity during FY 81 and the previous years was adequate to meet minimum combat readiness standards. The following outline highlights the MBCE allocation:

a. Strengths

(1) Provides a common allocation base for up to one-third of P2 Mission funding.

(2) Becomes a first step to provide standard cost allocation to the installations within FORSCOM.

b. Weaknesses

(1) Uses possibly outdated figures:

- Army Force Planning Cost Handbook originated from the Field Army Operating Cost Data (FAOCD).

- FAOCD was discontinued prior to 1977, cost updating for AFPCH addressed only annual inflation projections (inflation figures for most recent years being between 8 and 12 percent).

- AFPCH lists only 100 (40 percent) of all active types of units. A special computer printout has to be requested to gain data on the remaining type of units located within FORSCOM not listed in AFPCH.

- AFPCH costs do not reflect impact from extensive new and sophisticated equipment added to all units after 1977.

(2) Fails to address unfunded requirements from installations.

(3) Allows continuation of detailed COB submissions that are not utilized for up to one-third of all P2 Mission funding.

(4) Fails to address Army prioritization of specific FORSCOM commands. Funds are allocated only by MBCE percentages.

(5) Provides no association to activity levels conducted at installations for allocated funding.

c. Opportunities

(1) System continues to allow funding, on approval, to be moved within and between issue accounts at FORSCOM and installation levels.

(2) Provides a simple method to allocate additional new Rapid Deployment Force funds to units associated with the RDF mission.

(3) Provides a first step for a possible future standard to address Congressional interest on how funding is allocated and what the dollars are buying.

d. Threats

(1) No checks are required to ensure that projections of mission training requirements are accomplished prior to budget submissions. Command mission training forecasts may fail to precede budget timetable demands. When this occurs, commands are then forced to "fit" required training within fund allocations.

(2) Will commanders spend monies in issues allocated, or reallocate and continue annual pressure with additional unfunded requests?

2. Training Intensity Projections
   (An Output Measurement)

From data inputs by installation, FORSCOM developed training intensity projections within its command. Appendix D illustrates some of the analysis conducted for a recent budget year. These projections illuminate some of the

inconsistencies which exist in current output measurements.
The projection highlights follow:

  a. Strengths--Provides a model to measure outputs
consistent with current guidance using BTD's versus BE's.

  b. Weaknesses

  (1) Vague definition of BTD's allows for incon-
sistent determination of BTD's programmed or accomplished at
each installation.

  (2) Cost-saving incentives still fail to exist.
Monies serve as ceilings to training; spending goals must be
accomplished or face curtailment of later funding.

  (3) Determined BTD's normally do not include
activities from Reforger, Joint Exercises, National Training
Centers, Fort Drum, JWC and Alaska. Consequently, all
activities conducted are not projected.

  c. Opportunities--Leads to costing by activity level
by type unit, not by random allocation or game playing.

  d. Threats--Could lead to objective measurement of
commanders and commands by dollars to training conducted
rather than by subjective intuition and combat readiness.

 3. What Are Our Dollars Buying?

  The present financial control structure utilizing
MBCE fails to adequately measure what our dollars are buying.
Although it provides the first step to address common cost
allocation, FORSCOM representatives immediately agree that
the critical missing link remains output measurement.

MECE ignores projected activity levels at installations by costing only the number and type of units.

An additional major shortcoming of the present methodology is its failure to account for the significant increases in unfunded training requests. In FY 81, they reached $110 million against funded allocations of $251 million. This represents a simple statement that 43 percent more funding is needed to meet the expressed training demands from field installations within FORSCOM alone.

The question as to how do these unfunded requests (UFR's) occur undoubtedly is more significant than any one request's financial demand. An explanation arises after examination of the vague parameters which now measure outputs of training activities. First, costing is being accomplished in isolation at each installation. Little coordination or exchange of internal control procedures occur between commands. Costing becomes nonstandard as a result. Each command appears to be using different procedures in collecting cost data. Local factors such as personnel capabilities, the environment, and training facilities result in cost variances. Finally, different personalities, with accompanying interpretations and expectations, become influencial. The existence of such significant UFR's supports the belief that the Schedule 40 and 40-1 reports are currently little more than eyewash.

Simply, the current output measurements will not improve until new guidance is provided on what outputs are

actually to be measured. Today, cne is measured on success-
fully expending all allocated funding up to its exact dollar
value. Over or under expenditure is equally perceived as an
inadequate accomplishment. Savings are not encouraged nor
are any direct evaluations conducted to compare activity
accomplishment to funding expenditures.

Should we allocate dollars by using dollars spent
previously, numbers of type units, or activity levels con-
ducted? Do we measure by absolutes or intuition? Will we
exercise control to obtain the output measurement? These
questions will have to be addressed if the financial control
structure and its accompanying output measurement will ade-
quately detail what it is that operational dollars are buying.
The key is the adoption of a simple methodology which will
allow fund allocation to occur based upon meaningful informa-
tion, and which will provide the tools for resource management
down to and including unit level. Such a methodology must
provide a means of ensuring that training requirements of each
level are closely tied to fund allocations through an effective
forecasting system. Having recognized this fact, the Army has
initiated efforts to develop such a methodology. The primary
efforts are discussed in the next chapter.

III. CURRENT DEVELOPMENTS IN TRAINING RESOURCE MANAGEMENT

A. GENERAL

Unit training costs are difficult to define and identify because they are included with non-training costs in Army accounting systems. The Army-wide standard costing methodology for unit training should be based upon a system which can relate to actual costs, variances determined, and variances applied to standard cost factors. This would allow for accurate identification of unit training costs.

Unit training costs are predominately the cost of operating equipment, but other costs such as individual travel and transportation, transportation of equipment, special training devices, and other items can also be considered training costs. Since construction funds, repair and maintenance of facilities, and procurement of tactical equipment are budgeted and justified separately, they should be excluded from unit training costs. Therefore, the problem facing the Army is to develop a costing methodology which will provide creditable budget justification to make training management decisions at a minimum cost in dollars and turbulence in the tactical units. The costing methodology should:

1. Provide training cost estimates with a degree of acceptable accuracy to support budget requests.

2. Provide training cost estimates at the division and separate brigade level to provide a basis for issuing MACCM funds to these units in accordance with MACOM training priorities.

3. Provide training cost estimates at the battalion and separate company level to provide a basis for issuing bulk fuel and supplies allocations to these units in accordance with division training priorities.

4. Provide a standard costing system, simple to operate, at unit and division level which will identify training resource costs by training event for programmed and accomplished training.

5. Provide a system and procedures at installation level to develop standard cost factors, reconcile unit training standard costs to actual costs recorded in other installation systems, and fine tune standard cost factors so that computed standard costs for unit training are within an acceptable variance to actual costs. [Ref. 4]

The desired accounting or cost system must provide information so commanders can make better decisions. The benefits derived from the decisions made with this information must exceed the cost of generating the information. Currently, two proposed standard cost models are being developed which address the unit training costs associated with P2 Mission funding. They are the Training Management Control System (TMCS) at FORSCOM and the Battalion Training Model (BTMS) at

U.S. Army Training and Doctrine Command (TRADOC). Unfortun-
ately, to date neither system has successfully captured data
that reflect actual costs incurred with sufficient accuracy
or consistency. However, both projects continue to be
closely monitored by the Army Chief of Staff's office, illus-
trating the interest and determination by the Army to acquire
an adequate training cost management system.

B. TRAINING PLANNING PROCESS

TMCS and BTM are to be integral parts of the training
management process. That process is described in Army Train-
ing Circular 21-5-7. Both systems hope to give the training
manager a simple, easy way to include resource requirements
in the training planning process to ensure that the program
can be conducted.

To obtain the resources it needs to train, the Army must
tie its training plans to the continuous process of training
planning. Both concepts propose that training which cannot
be conducted because of limited resources can be explicitly
described and the impact of not accomplishing the training
can be better described in budget justification. Each system
is designed to be an integral part of the budget process as
well as playing a significant role in planning and programming
resources within the division.

C. TRAINING MANAGEMENT CONTROL SYSTEM (TMCS)[1]

1. System Overview

General: TMCS is to be a simple to operate mini-
computer system located in the brigade and division operation
sections for use by training managers. It was designed to
help the battalion commander and his staff develop training
plans that can be conducted within resources made available
for training. At division level, TMCS was designed to help
the division staff develop the Division Resource Plan by
identifying resources that must be set aside for garrison
support, resource allocations to support training programs,
and resource shortfalls. It is used to identify training
resource requirements (supply dollars and fuel) on the basis
of equipment and weapon system usage. TMCS further uses an
application of a standard cost accounting technique using
detailed equipment operating cost factors. TMCS also will
identify training ammunition and garrison costs. It presently
uses fuels, Class 9 repair part expenses, and aviation flying
hours as its principal resource constraints. Figure 3-1
illustrates the TMCS role in an Army-wide standard costing
system for unit training. Figure 3-2 is a schematic showing
the role of TMCS in the training management process.

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[1] The TMCS system overview and benefits comments were
selected from the "Standard Cost Procedures for the Training
Management Control System" prepared by U.S. Army Forces Com-
mand, Fort McPherson, GA, dated July 1979.

ARMY-WIDE STANDARD COSTING SYSTEM FOR UNIT TRAINING

FIGURE 3-1

45
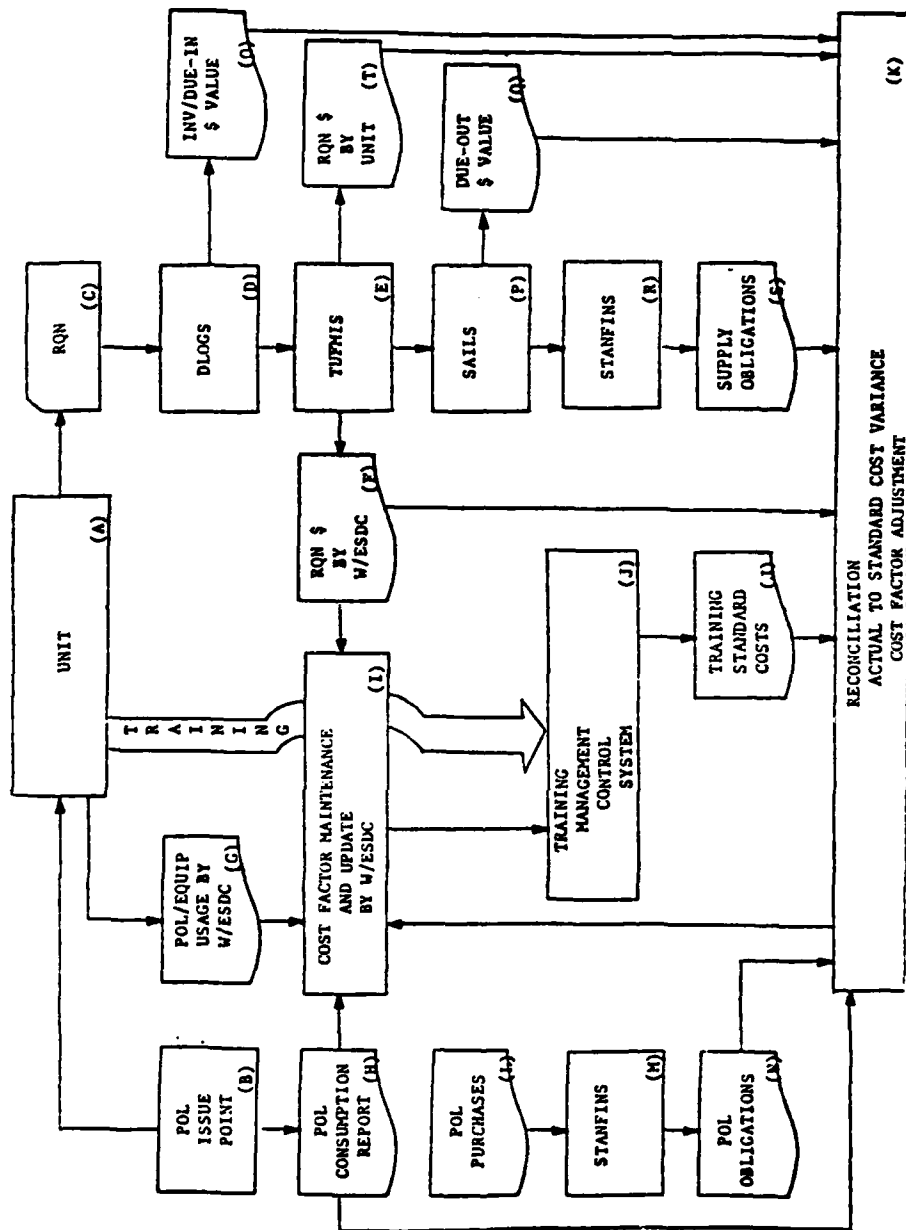
TMCS IN THE TRAINING MANAGEMENT PROCESS

FIGURE 3-2

46
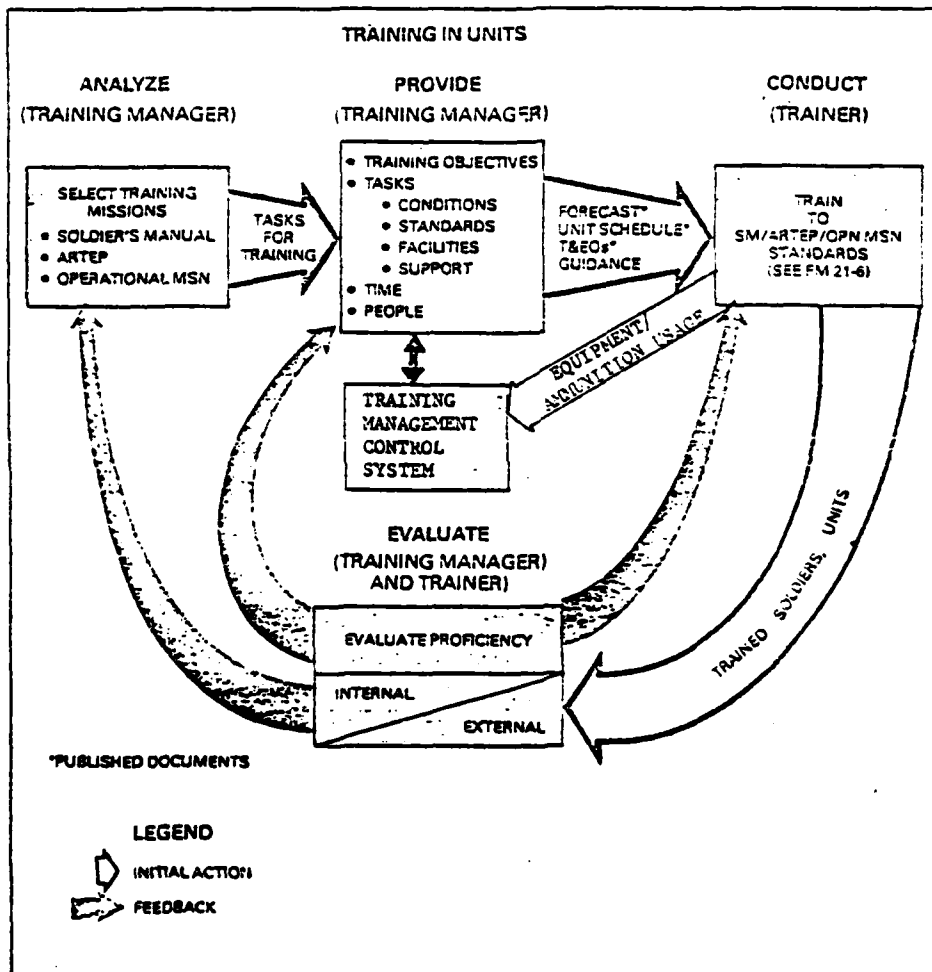
Division TMCS: Division level TMCS operations not
only include resource planning but they also develop master
files used in battalion level TMCS to simplify operation at
that level. For that reason, a discussion of a division
level TMCS is in order before addressing the heart of the
system, battalion level TMCS. The schematic at Figure 3-3
shows the functions of division TMCS. Applications of a
division level TMCS are described below:

  a. Option List Selection

     Division TMCS receives summary tapes of battalion
TMCS training and ammunition programs, previously prepared
division TMCS summary tapes, and input entered directly by
the training manager. The system is designed so the operator
(training manager) can select the option he desires to run.

  b. Division Roll-up of Field Training Costs

     This option summarizes the field training costs
from each battalion. The report reflects division level
maintenance costs for spare parts added to the battalion
training costs on the basis of equipment usage.

  c. Division Program 2 Costs

     This option is used to develop the Division
Resource Plan and it provides a report by unit and by type
of resource. The resources required are shown for both gar-
rison operations and field training. Resource shortfalls
are shown when the division resource plan exceeds budget
guidance, funding targets, or flying hours. The report

DIVISION TRAINING MANAGEMENT CONTROL SYSTEM

BATTALION TRAINING PROGRAMS*
BATTALION AMMUNITION PROGRAMS*

DIV SUMMARY TAPES

OPTION LIST
SELECTION

BATTALION MASTER TAPE

BATTALION/SEPARATE COMPANY
TRAINING MANAGEMENT CONTROL SYSTEM

DIVISION ROLLUP OF
FIELD TRAINING COSTS

FOR INITIAL ROLLUP

FOR ADD ONTO CURRENT ROLLUP

TO CHANGE A UNIT'S TOTALS

TO PRINT DIV FIELD
TRAINING ROLLUP

DIVISION PROGRAM
2 COSTS

DIVISION AMMUNITION
ROUTINE

COST FACTOR PRINT

CHANGE AMMO DATA
ON MASTER FILE

CHANGE EQUIPMENT DATA
ON MASTER FILE

CHANGE COST FACTOR DATA
ON MASTER TAPE

FIGURE 3-3

provides information to develop fuel, spare parts, self-service supply center, and flying hour allocations to units to finance their garrison operations and support their field training programs.

d. Division Ammunition Routine

This option is used to develop the Division Ammunition Plan and it contains the division authorization, battalion training ammunition requirements, with shortfalls and excesses by type round. It is used to develop annual ammunition estimates, identify trade-off possibilities within authorized flexibility factors, and prepare ammunition authorizations to units to support their training programs.

e. Cost Factors Print

This option prints the Equipment Operating Cost Factors Table used by battalion TMCS.

f. Change Ammunition Data on Master File

This option enables the division to build and update ammunition tables for each type battalion. It provides division control over the type of ammunition planned to be used by the units in battalion TMCS. It enables these tables to be updated as new types of ammunition are introduced or prices are changed.

g. Change Equipment Data on Master File

This option enables the division to build or change equipment tables for each type battalion.

h.   Change Cost Factor Data on Master Tape

This option is used to record updates to cost factors developed by the installation comptroller. These cost factor tables are use⌐ in battalion TMCS.

Battalion TMCS: Battalion TMCS are to be operated by personnel in the battalion located in a brigade head-quarters so each subordinate battalion can share the system to record training plans. It provides resource costs of those plans and training that have been accomplished. Figure 3-4 is a schematic showing the functions of battalion TMCS. Applications of a battalion level TMCS are described below:

a.   Option List Selection

Battalion TMCS operates on a master tape contain-ing computer programs plus equipment, ammunition, and cost factor tables generated in Division TMCS. It is designed so the operator (individual from battalion S-3 section) can select from a list of options to run.

b.   Print a Training Worksheet

This option prints a training information work-sheet using the equipment table developed in division TMCS. A separate worksheet is completed for each training event planned and it is used to input training event data into the system.

c.   Create or Add to Training Program or Delete Events

This is the option used to record in the system training event data from the worksheets. This option is also used to add or delete events from the training program.

BATTALION/SEPARATE COMPANY TRAINING MANAGEMENT CONTROL SYSTEM

*ONE MASTER TAPE
 COMPUTER PROGRAMS
 COST FACTORS
 EQUIPMENT TABLES

PRINT TRAINING WORKSHEET

CREATE OR ADD TO TRAINING
PROGRAM OR DELETE EVENTS

PRINT TRAINING PROGRAM

CHANGE EVENT DATA

CALCULATE EVENT COSTS
AT UNIT LEVEL

PRINT THE COST OF
TRAINING, BY EVENT

OPTION LIST
SELECTION

AMMUNITION SUBSYSTEM
OPTIONS

TRAINING PROGRAM TAPE
AMMUNITION PROGRAM TAPE

DIVISION LEVEL TRAINING
MANAGEMENT CONTROL SYSTEM

PRINT AMMUNITION WORKSHEET

CREATE OR ADD TO AMMO
PROGRAM OR DELETE EVENTS

PRINT AMMUNITION PROGRAM

CHANGE AMMUNITION EVENT
DATE

PRINT AMMUNITION
UNIT ROLLUP

FIGURE 3-4

d.   Print Training Program

This option prints training event data for each event. It can be verified and approved as valid. An option is available to print all events or only those selected by name.

e.   Change Event Data

This option is used to change previously entered data.

f.   Calculate Event Costs

This option computes the resource cost of each training event by multiplying equipment usage by its equipment operating cost factor.

g.   Print the Cost of Training, by Event

This option prints the resource cost of each training event and determines which events can be accomplished within resource limitations. It can be run with or without resource limitations. Battalion TMCS has the flexibility for the commander to make changes until he obtains the training program he wants that can be accomplished within his resources.

h.   Ammunition Subsystem Options

The ammunition subsystem is designed similarly to the training portion. A worksheet is produced with all the authorized types of ammunition for that type unit. A separate worksheet is completed for each event that requires ammunition. Data for each event is entered into the system,

printed and verified. An option is also available for changing, adding or deleting ammunition data. TMCS summarizes all ammunition requirements for training that can be conducted, compares it to the battalion ammunition authorization and identifies the types of ammunition that are over or under programmed.

   2. Current Status/Fielding Projection

   TMCS has been field tested at Fort Hood, Fort Carson, and Fort Bragg and received approval for Army-wide implementation. The system originally was tape oriented and required many manual tape changes during processing. To eliminate this problem and to accommodate future training needs, the computer configuration was changed to a disk system. This change should allow TMCS equipment to also support the soldier's Skill Qualification Test (SQT) scoring at each installation. The new configuration will provide an extra two million bytes of on-line direct access storage and will support the attachment of an optical scanner to read score sheets.

   The procurement action for the TMCS minicomputers was selected by the Small Business Administration (SBA) for set-aside to a disadvantaged vendor. The company under consideration is Pulau Electronics. This action by SBA has caused some delay in the procurement schedule. Pulau Electronics proposed using the Texas Instrument (TI) 990 Minicomputer Model 1, which was a change from the International Business Machines (IBM) system field tested earlier. An evaluation

of Pulau Electronics' proposal is still pending by Computer Systems Selection and Acquisition Agency (CSSAA). CSSAA and FORSCOM are also evaluating benchmark data, vendor furnished linear programs and changes to software necessary for TMCS to run on the TI equipment. If deficiencies can be resolved, a contract award may occur in the spring of 1982. The contract will specify a minimum order quantity of 199 to support Combat, Combat Support and a very limited number of Combat Service support units. A maximum order quantity of 300 mini-computers is to be included in any awarded contract. Any additional equipment is to be ordered on an "as required" basis.

If a contract with Pulau Electronics is awarded, the earliest delivery schedule for the first 20 computers would be 18 months later, followed by 40 each month thereafter. FORSCOM desires 28 computers prior to the first scheduled delivery in order to complete refinements of software, development of operator manuals, preparation of training packages, and to conduct new field validation testing of the TI equipment. The selection by SBA to procure TMCS equipment from a disadvantaged vendor has delayed TMCS fielding by at least two years. If Pulau Electronics is not accepted for final contract award, the program could witness even further delays.

3. **Benefits**

TMCS is a new concept in planning and programming training resources in the Army. Its introduction would be

54

a first step in using computers in units to aid in decision making. All of the benefits of TMCS will probably not be recognized until after it is implemented; however, some benefits identified to date are:

a. Realistic Training Plans

Commanders should be able to develop training programs with confidence that their resources will allow them to conduct the training. Last minute training program changes because of sudden resource shortfalls will be minimized.

b. Valid Training Costs

TMCS has the potential for providing valid training cost estimates for the budget and the Army. Commanders at all echelons can staff the resource requirements for training. This capability could give the Army a justifiable training budget. Commanders could then allocate resources with the knowledge that they are adequate to support the training with which they are associated.

c. Valid Ammunition Estimates

TMCS should provide ammunition estimates on the basis of specific training plans. Valid ammunition estimates are essential for the Army to plan ammunition production within limited resources and produce the now high cost rounds that are being introduced. Commanders will be able to identify, far in advance, any ammunition shortfalls and plan training accordingly.

d. Minicomputer Capability

TMCS provides a minicomputer that can be pro-
grammed in a language that is easily learned. With most
young officers receiving computer programming instruction
in college today, this added capability should enable units
to perform routine time-consuming tasks on the computers to
solve unit problems. This benefit has already been realized
by the test sites.

e. Cost

The Army has established the requirement to iden-
tify training costs in the budget. Developing these costs
at installation and division level is a time-consuming and
difficult process and their accuracy is questionable at
present. It is estimated that over time cost savings experi-
enced with the manual development of training costs for the
budget will go a long way towards paying for the TMCS
minicomputers.

4. Areas of Concern

With the implementation of TMCS, computers would be
introduced into units to aid in decision making. Yet TMCS
alone will not completely answer all areas of concern sur-
rounding improved control of resource management at unit
level. Problems requiring resolution which TMCS still needs
to address are:

a. This standard cost system does not appear to be
simple to operate. As described, TMCS will require every

56

activity, planned and conducted, to be costed in detail.
Budget forecasting would be accomplished by totaling each
separate activity's cost projected during a fiscal year.
The time required to develop the detailed equipment operat-
ing cost factors cannot help but be lengthy and time consum-
ing. To date, battalion personnel have not prepared the
detailed operational planning TMCS would now require. TMCS
would have units recording numbers and types of all equipment
used, miles traveled by each vehicle, and all resources used
by each item of equipment for every training activity con-
ducted. Undoubtedly, the key leaders would have to do all
of this detailed planning, requiring more demands upon their
limited, valuable time. TMCS may provide a "simple to operate"
piece of hardware, but the time and action required to provide
its input data appears to be excessive. TMCS appears to cause
battalions to become deeply involved in data management,
detracting from their principal mission of executing effective
training.

b. The long range costs of the system are still
unknown. TMCS advocates state that assigned unit personnel
can easily operate the fielded system. However, TMCS is not
just a new piece of hardware to train a soldier to operate.
It represents a new, expanded responsibility incurred by
units. With units now struggling just to accomplish today's
myriad of requirements, it is hard not to envision a call for
additional skilled personnel to perform this new duty.

57

New personnel will only further complicate unit manning assignments. Valid life cycle costs are still to be determined. Simply, TMCS may increase unit workloads it was designed to diminish.

c. System usage appears minimal. The principal usage of the system would occur for the annual, midyear, and quarterly budget forecasts/estimates. The other major usage would be the data updating/recording process. Thus, it appears the system would be idle most of the time with only a few peak demand periods.

d. Valid cost estimates are questionable. Estimates can only be as good as the data input into the system. Units pressed for time or having poor data collection procedures and standards will not produce valid estimates. Since the validity of estimates produced by TMCS are dependent upon "good" data input, the system may prove to be a considerable expense in time, personnel, and resources which may produce marginal results.

e. The cost estimates do not provide a basis for issuing MACOM funds to units in accordance with MACOM training priorities. As outlined, TMCS does not provide a common denominator for a MACOM to allocate training funds. TMCS was designed to determine specific unit activity costs. The system cannot measure effectiveness for it does not establish a fixed or common measure to evaluate training activities. TMCS costs all activities, but does not define, group, or categorize activities to ensure comparisons remain valid.

D. BATTALION TRAINING MODEL (BTM)[2]

1. System Overview

Initial development of the Battalion Training Model
(BTM) occurred as a result of the Army Training Study (ARTS)
conducted in the 1978-79 time frame. The model was formulated
as a linear goal programming mathematical model of both train-
ing and non-training programs as conducted by a typical
battalion. Initially the model was used as a research tool
to investigate a variety of training strategies and to per-
form sensitivity analysis on factors affecting training. In
the latter stages of BTM development it was envisioned by
ARTS that the model could be maintained at battalion level
to assist commanders in formulating their training programs.
It was also envisioned that the model could utilize the hard-
ware planned for TMCS. In March of 1979, the Chief of Staff
of the Army (CSA) was briefed by the ARTS group. One recom-
mendation made in the briefing was continued development of
BTM. The CSA concurred and directed that TRADOC continue to
develop BTM.

When the BTM was moved from ARTS to Unit Training
Developments Directorate, HQ TRADOC in August 1979, an in-
vestigation to determine the feasibility and desirability
of locating the model at battalion level was initiated.

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[2] The BTM system overview comments were extracted from
briefing documents/notes prepared by the Office of Unit
Training Directorate, Deputy Chief of Staff for Training,
Headquarters TRADOC, Fort Monroe, Virginia.

As a result of this investigation, it was determined that the best course of action was not to locate the model at battalion level but rather to put the model at division/ installation level. The basic rationale for this was that it is at division/installation level that the real management and control of training assets occur and hence is where the model could be most useful. Also, at this time it was determined that for the BTM to be a truly valuable training management tool it would not only have to produce optimum training programs but also should be able to schedule the training in accordance with available training assets. Figure 3-5 provides a graphical display of the BTM system.

The purposes of the model are to provide a quantitative link between training resources and training readiness, to assist the training manager, to show the effects of training distractors, and to provide budget justification for training funds. The model attempts to quantify training requirements in terms of training readiness and considers cost resources (POL, repair parts, ammo) and training resources (time, people) in the development of that program. The data base for the model was derived from the results of extensive surveys to battalion level commanders and trainers in the field to provide a "best available" answer to how much training is enough and what kind of training should be conducted to ensure a high degree of training readiness. The model considers the effects of training distractors (personnel not

BATTALION TRAINING MODEL

FIGURE 3-5

61
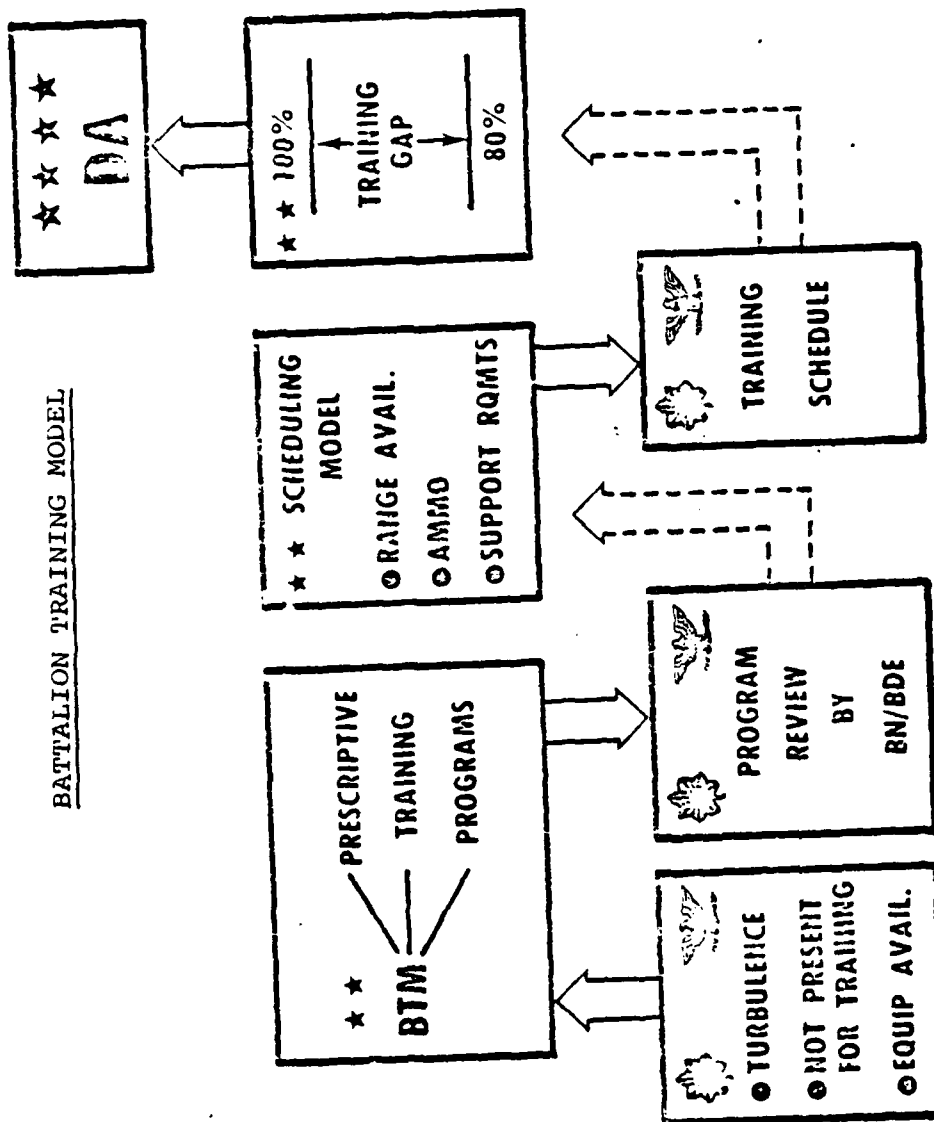
present for training, turbulence, and senior grade substitution) and constraints (dollars, time). The model is currently configured as a linear goal program consisting of 100 objectives and 78 decision variables. It has been loaded and run on both CDC 6600 and IBM 360-370 mainframe computers. The final product of the model results in a training program in which individual and collective tasks have been fully integrated with ARTEP oriented missions to establish not only what training events should be conducted, but also the frequency of those events as influenced by the commander's priorities and various constraints.

At division/installation level a typical scenario envisions the development of optimal training programs by the BTM for maneuver and selected Combat Support battalions in the division tailored to their particular needs and subject to approval of the division commander. These programs would then be entered into a scheduling module of the BTM which would optimize across all battalions based on training resource constraints. The initial program would establish what the battalions individually required to attain a given readiness level. The scheduling module would show the best that each could attain given the resources available to the mission. The differences between the two would represent the "training gap" being bought with the resources provided.

2. Current Status/Fielding Projection

BTM has recently moved into its testing stage. The system has been successfully loaded and tested on the IBM 360 computer at Fort Monroe, Virginia. There are currently two training program packages available, a mechanized infantry program and an armor program. These two programs were developed under contract to Actuarial Research Corporation in August 1980. No effort, as of now, has been initiated to expand the model beyond the two listed versions. However, work could begin on other versions should funds be made available and the option appear desirable. The scheduling algorithm contract, let in August 1980 to the University of Pennsylvania, was completed in July 1981. Completion of the scheduling software marked an end to the initial design work of the system.

BTM has identified its cost data in the model as being weak and requiring validation. Initially, it was envisioned that the common costing methodology being developed by TMCS would provide validat cost data which could replace the old data in the model. However, due to procurement difficulties experienced by TMCS, useful cost data are not readily available. Without useful cost data, BTM cannot provide meaningful resource management projections.

Should a source of valid cost data be developed, the mechanized infantry and armor versions of BTM, along with a scheduling module, should be ready for field testing in

late 1981. The results of a field test will prove useful in determining if, and if so, how, the system will be fielded Army-wide. BTM hopes to provide the tool necessary to develop prescriptive training programs under the Army's Standardization Program as well as provide budget justification for unit training.

3. Benefits

BTM, like TMCS, is another new concept proposed for planning and programming of training resources in the Army. Its introduction would also use computers to aid in decision making, but unlike TMCS which requires new computer hardware purchases, BTM proposes to use existing installation computer facilities. BTM requires only new software programs for existing computer hardware, saving the expense of new equipment and need for training personnel on new computer systems. Some benefits associated with BTM are:

a. Realistic Training Plans

BTM will provide commanders with a general training program as a guide, developed specifically for each type of battalion sized unit (infantry, armor, or artillery). The program is stored in the system, capable of being tailored, changed, or deleted completely as deemed appropriate by each commander. The standard program provides commanders with a common starting point with which to develop each unit's customized training program.

b. Coordinated Scheduling for Training

BTM provides an added dimension to realistic
training plan development. It conducts a scheduling review
of all unit programs against known installation facilities
and resource constraints. BTM arbitrates scheduled train-
ing conflicts for units and produces an installation master
training schedule. This added dimension should help simplify
the current manual scheduling process conducted by division
and installation operations sections (G-3's).

c. Valid Training Costs

BTM has the potential for providing valid training
cost estimates for budget submissions and resource management
during the budget execution phase. Training costs would be
identified in three major categories--field, range, or garri-
son training days. These categories should give Congressional
and Army planners a clearer picture as to how training re-
sources are used and allocated. BTM should provide an improve-
ment over current practices of defining activities in the
general category of a "battalion training day."

d. Valid Ammunition and Fuel Estimates

BTM should be able to retain historical data
on ammunition and fuel expenditures for specific types of
training activities. The high cost associated with these
two resources demand that BTM provide valid estimates. By
monitoring resource expenditures against projected training

activities, commanders should be able to identify overages or shortfalls in resources and adjust training accordingly.

e. Computer Capability and Costs

BTM uses existing computer facilities on each installation. Its successful test on an IBM 360 mainframe computer allows for procurement of only additional software to implement BTM. Consequently, BTM enjoys the enhanced operational capability provided by computer operations, yet does not incur new hardware costs or personnel retraining demands. BTM should save numerous manhours by simplifying the current time-consuming process of resource allocation and improve cost estimate accuracy.

4. Areas of Concern

The Battalion Training Model recognized the importance of elevating responsibility for management of training resources to the division/installation level. Although BTM removes many unit oriented tasks that TMCS requires, it also requires resolution of specific system shortcomings. The areas of concern that BTM still must address are:

a. The model does not contain an internal cost collection format. Activity costs must be determined separately and input into the model's program. Essentially, BTM does not contain this extremely vital methodology and must obtain activity costs from an external source.

b. BTM is currently applicable only to mechanized infantry and armor battalions. Programs for all battalions

would be required for the system to serve as a basis for training fund allocations. At this time it has not been determined if these other unit programs can be prepared, or if they will accurately project all unit costs and activities.

c. Timely access for users to the model is questionable. Installation computers already perform numerous operations. Timely input procedures and output returns are marginal at best for existing computer operations. During the planning process, units will need quick and easy system access when examining multiple training alternatives. If not, needless time will be wasted and user confidence in and tolerance for the system will surely diminish. In the next chapter a battalion and division control system is developed as an alternative approach to overcome some of the disadvantages addressed concerning TMCS and BTM.

IV. PROPOSED TRAINING RESOURCE MANAGEMENT MODEL

A. GENERAL

Demand for efficient and effective management of training resources is expanding battalion-sized unit participation in BTMS preparation. One new area of involvement that battalion commands must now address is the realm of financial management of training resources. Requirements are now slowly forcing units to conduct and provide detailed financial projections and analysis to use or support requests for needed training resources. Unfortunately, no standardized methodology or identified staff functioning at battalion level exists to habitually collect, correlate, and retain historical activity data for valid cost projections. Often one staff member of the unit, the battalion executive officer or a junior staff officer, inherits this expanded duty and struggles to establish and operate the program to provide timely, accurate information. Simply stated, most battalions have neither skilled financial personnel nor implemented internal controls to adequately contend with this new demand.

True, battalion information normally is exchanged or submitted in scheduled reports (TUFMIS, fuel usage, and training ammunition expenditures) to division level staffs. As individual reports, each fails to provide a complete picture of all associated resource expenditures to conducted activities.

68

Each staff at battalion and division level functions in its own defined realm of personnel, unit operations, or logistic concern. Rarely do these staff reports capture data even by common time interval or organizational level. Examples are fuel usage reports retained by battalions on a monthly period, while TUFMIS computer listings return data by company/battery/ troop on a weekly period. Some reports capture data Monday-Friday only, while others may be Friday-Thursday inclusive. Most lag in time and accuracy due to undefined, vague, or unenforced guidelines established within the organization. Finally, command emphasis and priority dictate the validity of any gathered data. If a command perceives that some type of information is essential, sufficient time and effort will be provided to obtain it. If not, or if the information is given priority at the next demanded input interval, the information may be worthless or more expensive in time and resources than it costs to gather. With readily accessible and timely information, battalions might better contend with the numerous short-notice decisions they face daily. Unfortunately, battalions find their data accumulation and processing techniques are not adequate and responsive to conduct the fiscal reviews or analysis now being demanded.

So how can battalions contend with their expanding role in the financial management of training resources? As pictured today, the battalion's role must first be standardized and defined within each division. Division commanders might

establish a policy where resources become centrally con-
trolled at division level, but monitored at each command
level. Establishment of a common fiscal control system at
battalion and division level would be required. The control
system could be tailored to address particular unit needs,
concerns, and personalities of each division command. With
many Army fiscal procedures consuming large volumes of time
and resources to support operations with questionable results,
individual internal control systems for battalions and
divisions can be developed to address this concern.

In the remainder of this chapter, a battalion control
system will be developed as a simple system which can inter-
face with a division system. An expanded system for battalions
is also discussed should the supporting division system not
be implemented, or demands continue to dictate that battalions
provide detailed budget forecasting information to higher
headquarters. Finally, a division fiscal control system will
be developed along with a discussion as to how it might inter-
face with budget forecasting requirements at higher headquart-
ers. The proposed systems are oriented to a theme of central
planning/control (at division) with decentralized execution/
expenditure authority of training resources (at battalions).
Hopefully these proposed system formats will identify, aid,
and educate personnel in simple financial procedures to
support training resource management.

B. AN INTERNAL CONTROL SYSTEM

The approved operating budget of a battalion, consisting both of planned expenses and expected outputs, is the principal financial guideline for operations. It dictates the nature and content of a unit's training program. Presumably, a command wants the unit to operate in a way that is consistent with this plan, unless there is a good reason to depart from it. This qualification is important, for it means that the control process is necessarily more complicated than simply insisting that the organization do what the training program prescribes. The purpose of an internal control system is to assure that activities are accomplished effectively and efficiently. If, because of changed conditions, a different course of action or activity than was initially planned will improve unit readiness, then that activity should be performed if feasible within available resources. Thus, the control system should have two aspects: (1) it should assure that in the absence of reasons to do otherwise the training plan set forth is adhered to, and (2) it should provide a way of changing the plan if conditions warrant. [Ref. 5, p. 437]

1. A Battalion Control System

A battalion control system should provide a quick, simple reference to associate costs with training activities. The system must allow for the monitoring of expenditures of training resources in dollars, types of fuels, and kinds of ammunition. Maintaining current aggregate totals of

expenditures during established reporting cycles ensures that checks are available on external unit accounting records and procedures. It also provides the critical monitoring of internal resource usages within approved resource ceilings.

One fiscal control system which might give a battalion command a simple methodology to·capture costs with associated training is seen formated in Figure 4-1. The system requires the retention of historical data generated within the unit, captured and retained on a weekly basis. Figure 4-2 illustrates how battalion training activities are listed on the calendar diagram while expended resources are entered in listed columns below. The training activities listed can be any activity the command prefers. However, it is recommended that only field operations, range firing exercises, or extraordinary activities (like REFORGER, Fort Drum, or JCS exercises) be identified. All forms of training activities, regardless of category, conducted in or around the confines of the battalion billet area, should be considered garrison or force sustainment training and not listed on the document calendar. Garrison activities, now displayed as blank calendar periods, become fixed, training day costs while listed activities become variable costs. Non-training days such as weekends, national holidays, and unit training holidays are identified with an "N" so as to not dilute the fixed garrison day cost. Since training was not conducted on these

MAJOR TRAINING ACTIVITY CALENDAR

UNIT_____   WEEK OF_____

S	M	T	W	T	F	S

N: Non Training Day

UNIT	FUEL (M/D gal)	CL IX ($)	AMMO (*)	OTHER ($)
___	_____	_____	_____	_____
___	_____	_____	_____	_____
___	_____	_____	_____	_____
___	_____	_____	_____	_____
___	_____	_____	_____	_____
___	_____	_____	_____	_____

* A Battalion/Division Munition Code

FIGURE 4-1

73

MAJOR TRAINING ACTIVITY CALENDAR

UNIT 1-1 Inf   WEEK OF 1 Sep- 12 Oct 9x

	S	M	T	W	T	F	S
1-7	----- DIV FTX ---------------------						N
8-14	N		(1/4) -- M16---- Qual				N
15-21	N						N
22-28	N						N
29-5	N	-------------- (1/4)	ARTEP------------------				N
6-12	N					N	N

N: Non Training Day

	UNIT	FUEL (M/D gal)		CL IX (S)	AMMO (*)	OTHER (S)
1-7	1-1 Inf	804	490	1334	4k-B,6-F 12k-D,8-E	668
8-14	"	20	40	1692	1260-A 3400-C	561
15-21	"	50	0	1791	0	700
22-28	"	40	95	827	0	2044
29-5	"	200	125	1400	10000-A 2000-C	243
6-12	"	45	90	1052	0	1250

* A Battalion/Division Munition Code

FIGURE 4-2

non-training days, training costs should not be apportioned to them.[3]

The critical associated costs to be collected for the conducted training activities, as shown in Figure 4-2, are repair parts (class 9--in dollars), fuel (mogas and diesel--in gallons), ammunition (type ammunition--by round), and other expenses (SSSC accounts and any other relevant expenditure specific to a command--in dollars). These costs constitute the relevant training resources expended by a unit and will be categorized as first echelon costs. First echelon costs are the unit expenditures required to support only internal battalion generated and directed activities.

Although it should be understood that ammunition is allocated as a separate item since ammunition expenditures are controlled by availability and Army ammunition policies, battalion expenditures are retained to serve as ready re-minders of ammunition requirements expended on a training activity.[4] Some minor adjustments by trading types of rounds for another can be accomplished; however, ammunition

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[3]Training activities do not always involve all of a battalion's assets. On these occasions, only that portion of the battalion conducting the listed activity should be noted (i.e., a company operation may be a 1/4 battalion oper-ation). Use of the battalion equivalent (BE) definition in Chapter II would be appropriate. Those battalion assets not listed are understood to be conducting garrison operations.

[4]If the battalion system is providing input data to a larger division system, ammunition expenditures will un-doubedly need to be retained and reported as the other unit resource expenditures.

funding is accomplished separately from training funding. Training funds cannot be used to purchase more munitions, because expenditures are regulated by comparisons of stockage level requirements with quantities produced. Thus, repair parts, fuel, and extraordinary expenditures constitute the relevant costs to be collected for the control system, while ammunition expenditures are normally retained only for internal battalion planning purposes.

Expanding the simple formated control system described in Figure 4-2, pertinent historical data can be captured not only at battalion level but also at company level. Figure 4-3 illustrates how a battalion can format its data collection at company, battery, and troop level. The company model uses one formated sheet for each week of data collection, where the battalion format captures up to six weeks of data per sheet. Either format will produce the same battalion costing information. Using the company collection format, battalions are afforded the opportunity to identify costs closer to specific multi-leveled activities (platoon, company, or battalion). Rarely will all activities conducted utilize an entire battalion. Most training activities are scheduled and conducted as platoon or company operations. Consequently, the company format (Figure 4-3) provides better targeted costing data to multi-leveled activities and introduces battalion fiscal management to the company leadership. This serves as an education forum for junior officers in fiscal management by illustrating

MAJOR TRAINING ACTIVITY CALENDAR

UNIT 1-1 Inf   WEEK OF 1-7 Jan 8x

	S	M	T	W	T	F	S
HQ	---------	BN FTX---	---------				N
A	---------	BN FTX---	---------				N
B	---------	BN FTX---	---------				N
C	N						N
CS	---------	BN FTX---	---------				N

N: Non Training Day

UNIT	FUEL (M/D gal)		CL IX ($)	AMMO (*)	OTHER ($)
HQ	165	330	1169	400-B	
A	96	65	0	1400-B	
B	52	35	109	900-B,8-E	
C	0	0	138	0	
CS	481	60	417	13k-B 12k-D,6-F	
Tot	804	490	1834	4k-B,6-F 12k-D,8-E	158

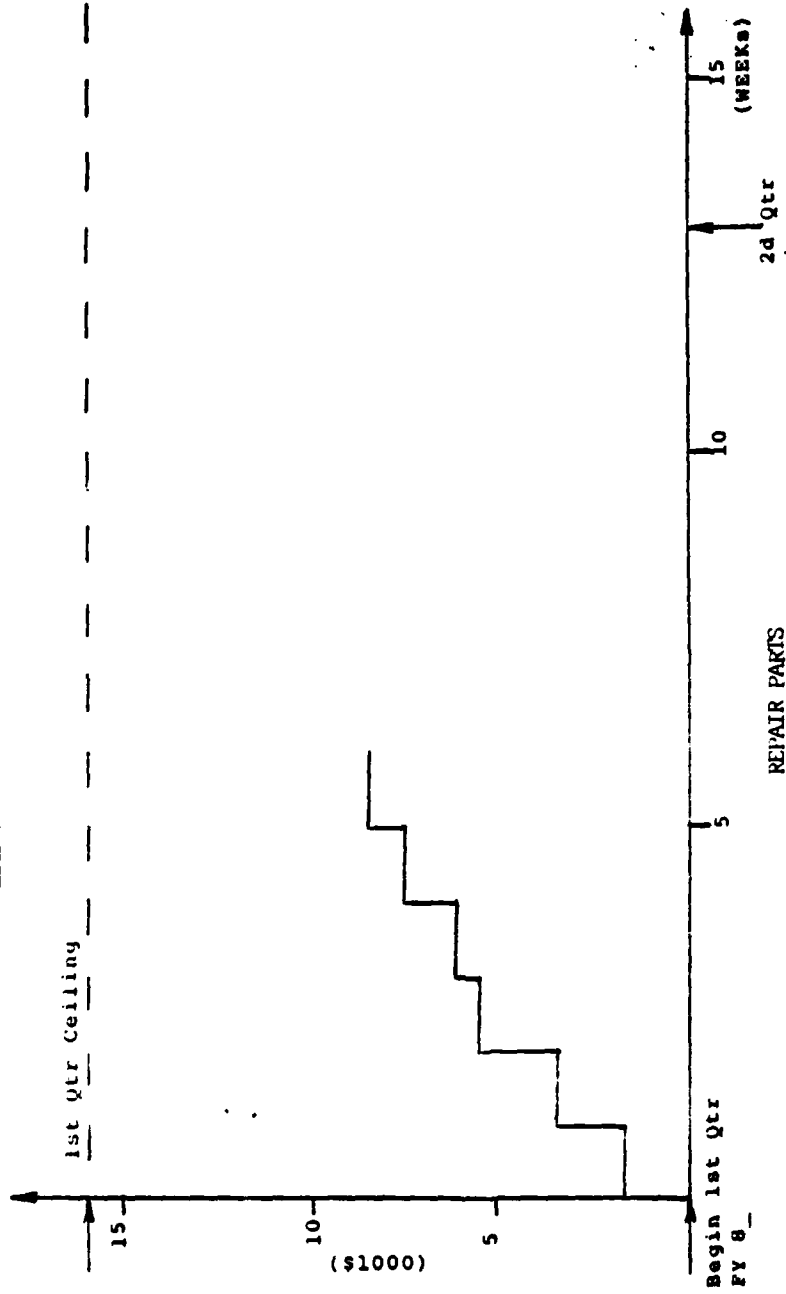* A Battalion/Division Munition Code

FIGURE 4-3

77

that every activity, simple or complex, requires and expends
the battalion's finite resources. It further provides his-
torical costing estimates at the company level should the
command find this information and involvement useful. How-
ever, it is important to limit entries to only those of
command interest, not every entry on a unit training schedule.[5]

This simple format of an internal fiscal control
system does little more at battalion level than provide a
standardized collection procedure so that at a glance one
can see what costs generally follow activities conducted.
It provides an opportunity to retain weekly expenditures
based on weekly activities, and affords data collection to
maintain total expenditures of resources over time and pro-
vide comparison with established resource ceilings. This is
accomplished by monitoring resource consumptions using a
diagram as in Figure 4-4. By charting the expenditures of
a resource over the fiscal year, a battalion can better vis-
ualize and regulate expenditures toward its resource ceilings.
Based upon the command's knowledge of upcoming training activ-
ities, resource allocations and adjustments can be better
managed.

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[5] The company collection format should be easier for per-
sonnel to list and describe than battalion assets conducting
training activities. The calendar entries are simple, and
personnel need not worry about computing battalion fractions.
Transcribing listed activities to battalion equivalents (BE)
would be accomplished only if the data were to be analyzed
at division.

RESOURCE CONSUMPTION CHART

1st Qtr Ceiling

REPAIR PARTS

FIGURE 4-4

(WEEKs)

2d Qtr

15

10

5

15

10

5

($1000)

Begin 1st Qtr
FY 8_

79

The control system proposed obviously does not pro-
vide exact detailed costing for each activity conducted.
The proposed format can only hope to serve as a limited aid.
It is intended to be a system providing gross costing figures
for a quick look or "rule of thumb" analysis to cost training
activities. Also, it is to serve as the data collection
model for a larger division control system. A historical
document of weekly battalion costs matched with significant
training activities can be an asset for monitoring budget
execution. However, the battalion format fails to account
for specific expenditure lags, may not capture all informa-
tion due to administrative errors, or identify all costs to
a specific activity. To become more activity-specific, addi-
tional detailed analytical techniques would be required.
Normally, division system personnel would provide this sup-
port. Regardless of these procedures, the outlined fiscal
control system serves to establish some format to collect
historical costs simultaneously with unit training activities.
If it aids units by providing only an organized record of
accumulated expenditures to help answer the short term ques-
tions on those resource allocations each unit continually
encounters, it may be worth the time needed to develop and
implement the system.

   2. An Expanded Battalion Control System

      Since many divisions have not established an adequate
internal fiscal control system to manage their training

resources, battalions may be required to develop their own activity-specific cost estimates. These cost estimates can be developed by utilizing an additional analytical technique with the same data generated by the above simple system. This analysis technique need only be used if the division does not provide costing services or a battalion chooses to verify division costing projections.

As described earlier, fixed costs (garrison days) and variable costs (field, range, or extraordinary activity days) must be determined. Figure 4-5 illustrates a technique which may help improve the identification of a unit's fixed and variable costs. The diagram lists all calendar activities from the data sheets (Figure 4-2 or 4-3) across the time axis. The weekly resource expenditures are displayed along the dollar axis. Garrison day costs are determined by averaging all garrison day costs over the total garrison days performed during the time interval concerned. In Figure 4-5 the average garrison day costs would be:

EXAMPLE

Week	Week's Total Expenditure	Garrison Day Expenditure	+	Garrison Day
1	1834	917	÷	3
2	1692	1692	÷	5
3	1791	1791	÷	5
4	827	827	÷	5
5	1400	3/4 (1120) + 280	÷	5
6	1052	1052	÷	4
		7399	÷	27 = $274 per day

UNIT AVERAGE COST DIAGRAM

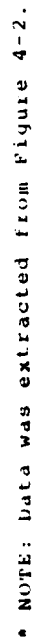REPAIR PARTS

* NOTE: Data was extracted from Figure 4-2.

FIGURE 4-5

Specific activity costs are determined using the same technique as the garrison costs. Yet the activity costs often require more intuitive interpretation to determine true associated costs. Cost interpretation may be required since units rarely process all activity expenditures during the period the activity was conducted. Repair part expenditures usually are low during field operations because equipment may not be inspected in as great a detail or as regularly as in garrison. Often expenditures are not processed until the training activity is completed and after the unit has returned to garrison. If these costs are not adjusted as a specific activity expense but left as a garrison expense, neither the activity nor garrison cost estimates will be accurate. Large cost fluctuations displayed prior to or following listed activities may include some of the specific training activity's costs. Knowledge of a unit's operating procedures is required to determine whether the costs incurred prior to an activity (costs shown on the calendar as garrison day costs) are fixed or variable costs. Only direct costs associated to the specific activity should be removed from consideration as garrison costs. Costs generated to upgrade the unit to normal operational standards prior to undertaking a major training activity are fixed costs which would normally be incurred even without any upcoming activity.

Fuel consumption generally follows the true activity time periods and becomes a good indicator of the level of

training activities conducted. Fuel is a good indicator because the more you train the more fuel you consume. Consequently, fuel, being an expensive, finite battalion resource, often dictates the activity level of a battalion's training program. During field operations, however, unit record keeping can decay with sloppy issue procedures. Adequate issue controls are imperative to ensure fuel projections provided by the analysis will be meaningful.

Specific activity cost analysis must recognize these "operational truths" and adjust the cost estimates accordingly. As a result, interpretation of unit operations is an important factor to consider to ensure valid cost projections are generated from the cost data. Yet, it is important to remind the reader that the validity of any cost projection hinges on two factors. First, the collected data must be as complete and accurate as possible. Second, the validity and accuracy of the cost projections are subject to change and numerical refinement as more data are obtained over time. As more data are collected and included in the data base, confidence in cost estimates should improve.

The issue at this stage is how does one record and organize the collected data and cost projections as time progresses. The heart of this system is the standardized collection model (Figure 4-1). It provides a format to accurately and habitually collect historical unit cost data. Any prolonged break in the collection process would diminish the

cost averaging concept which supports the costing projections. Event record cards or form papers on each variable cost (activity) can be kept in a simple recipe book format at division level. An example event record card is shown in Figure 4-6. Battalions should continue to maintain expenditure graphs (Figure 4-4) to monitor gross resource expenditures as training activities are conducted and resources are consumed. A small binder or folder can easily maintain all battalion records. The battalion executive officer or operations officer can supervise and maintain this information for the command.

This additional technique does provide an improvement over the initial simple control system. The expanded format has the same strengths noted for the simple system, yet it now helps to improve specific activity costing. It presents an acceptable estimate for cost data generated at battalion level without requiring additional personnel or equipment. However, this system will require general mathematical skills and knowledge of analytical techniques by the unit personnel supervising it. Expenditures still may have limited validity due to processing lags. The major concern remains that battalions may not habitually have the skilled personnel or time to handle this added detailed work. Battalion and company time is very limited by present demands placed upon them. Direction by higher headquarters or regulations normally dictate most of a unit's time. It is not

COST/EVENT RECORD CARD

FIGURE 4-6

86

hard to envision new personnel or equipment requests being
initiated to aid each battalion contending with this fiscal
management. Any new personnel or equipment will become new
expenses to be added, and probably divert present battalion
resources away from current operations. With resource allo-
cation controlled at division level, any detailed costing
requirements should be done at that same level. A division
can staff itself more easily than a battalion. However, if
the battalions are required to perform detailed fiscal analy-
sis, hopefully the discussed control system will provide a
starting point and approach to undertake the requirement.

    3. <u>The Division Level Control System</u>

        a. System Overview

            The division fiscal control system to be pre-
sented supports a theme of central planning conducted at
division level with decentralized execution conducted at
battalion level. Since the majority of a battalion's activ-
ities are directed by higher headquarters, costing for these
activities naturally may become dictated outside the battal-
ion's control. This proposed division fiscal control system
is based upon a division command structure controlling allo-
cation of all battalion resources dedicated to its training
activities, freeing battalions to concentrate on executing
proficient training activities. The system directs the
division staffs to develop the detailed fiscal information
as shown in Figure 4-5 with battalions providing

data inputs.[6] Divisions would also be responsible for maintaining the event record cards for each subordinate battalion.[7] Consequently, each level of the command structure remains involved in fiscal management, but the division becomes the responsible level of fiscal review, not the battalion.

To undertake responsibility for central planning the division must begin by improving control of the training resources it allocates to its subordinate battalions. Many divisions provide their battalions with training guidance as to what activities they can expect to conduct during a specific period. This guidance usually occurs in annual and quarterly training directives from the division commander. Major training activities are normally identified, assigned, and scheduled to aid early battalion planning. BTMS is utilized by the battalion to fill out individual training programs with divisions allowing initial battalion activity scheduling. Within the system, divisions initially schedule all known major activities to include range access for firing training ammunition. Battalions complete their training programs and schedule their remaining training activities using BTMS

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[6] Ammunition expenditures need not be monitored to each specific activity unless directed by the division system. Command interest probably would be in the totals of types of munitions expended.

[7] Automated equipment, like a minicomputer in the division G-3 section, would certainly enhance record keeping and analysis.

88

procedures to accomplish battalion training objectives. Later, scheduling adjustments are performed at division level.

Currently, few division commands require detailed costing analysis to be accomplished by battalions during their BTMS planning and programming process. Often training activities are planned, programmed, and approved based only on a perceived impact upon a unit's readiness posture. Resource expenditures are usually estimated by a "best guess" or "seat of the pants" methodology. Under the proposed system the division would collect and review training activity expenditures by type of battalion so that valid estimates of costs and resource expenditures can be made. With these estimates, initial training guidance to battalions would reflect designated training activities with associated costs, range access periods, and the division commander's training philosophy and guidance. Another major addition in the training guidance directive would be target ceiling figures for repair parts, fuel, and ammunition expenditures. The target figures, along with designated training activity costs, allow battalions to determine what costs and resources they can program to support battalion-generated training activities. Costing for battalion planned activities could come from the data files at division or from the battalion's own internal fiscal system files. Once each battalion is allocated its approved resource ceilings for the new fiscal year, adjustments for over or under expenditures can be addressed.

The proposed division control system begins by
addressing how resources (dollars, fuel, ammunition) are
provided to its subordinate commands. The division begins
with a master training schedule as illustrated in Figure 4-7.
Known battalion activities (#) are assigned on the schedule.
These activities are directed or generated by non-battalion
commands. Examples might be division field exercises, divi-
sion evaluated battalion ARTEP's, REFORGER exercises, national
training center exercises, and Department of Army training
requirements like weapon qualifications or reverse cycle
training (night training). The initial unassigned training
periods constitute battalion-designated training periods.
Battalions would develop their training programs to complete
the master training schedule using BTMS procedures supple-
mented with fiscal information which recognizes resource
costs for each planned major training activity.[8] An impor-
tant point to recognize is that the system can support a
division philosophy which may desire to dictate large portions
of training time to its units or allow maximum training time
for battalion-generated activities. The key remains prior
identification of training activity costs. The system enables
costing information to accompany the planning process and
follow the activity into execution.

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[8] Divisions could schedule battalion BTMS workshops and
routine access to the division data files to preclude conflicts.

DIVISION MASTER TRAINING SCHEDULE

FY 8_

UNITS	O	N	D	J	F	M	A	M	J	J	A	S
1st Bde 1-1 2-1 3-1												
2d Bde 1-2 2-2 3-2												
3rd Bde 1-3 2-3 3-3												
Div Arty 1-4 2-4 3-4												
DISCOM 1-5 2-5 3-5 4-5												
Sep Bn/Co 1-6 2-6 3-6 4-6												

FIGURE 4-7

91

How the division creates the cost data necessary
to support this system becomes a critical process. A method
to develop initial cost data for the system, absent any
established cost records, is to conduct an extensive review
of on-hand unit records. One should go back at least two
years to ensure a reasonable data base is developed so fixed
(garrison costs) and variable (designated training activities)
costs can be determined. The data can be generated from
TUFMIS computer printouts, fuel usage records, and field
training reports (after action reports) to establish initial
cost figures for the fixed and variable costs. Using a re-
quired data input model as in Figure 4-2 or 4-3, future
training activity costs can be used to refine and update the
initial activity cost estimates. The key resource expendi-
tures to be monitored remain repair parts in dollars, fuel
by type of gallon, and any extraordinary costs in dollars
like SSSC accounts or other command specific training funds
costs. These are the principal resources expended to support
battalion training activities.

An operating example of the proposed division
internal control system is found in the 25th Infantry Division,
Scholfield Barracks, Hawaii. Division personnel have found
the system to be a significant aid in improving training
resource management. The location of the 25th Infantry Divi-
sion presented some additional training resource considerations
and expenses which many units might not encounter, yet the

system was sufficiently flexible to adjust to these consider-
ations. One such major consideration was having units sta-
tioned on one island with most training facilities and areas
located on another island. This caused frequent large
expenditures to be mixed in with normal garrison costs prior
to undertaking training activities. Using the analytical
technique described in Figure 4-5, costs were successfully
isolated to their appropriate periods. The 25th Infantry
Division system also used block training periods for unit
range access and retained historical data by type of unit
training activity to determine valid cost projections.

    b. How Dollars are Monitored (Execution Phase)

        The division may follow the execution phase of
resource expenditures on a biweekly basis. As in the detailed
battalion control system, actual resource expenditures (see
Figure 4-4) would be plotted against time. Figure 4-8 illus-
trates how this monitoring of actual expenditures may be
improved by adding projected resource expenditures developed
after receipt of approved resource ceilings. Monitoring
actual and projected resource expenditures provides a clear
indication as to whether individual training activities are
efficiently executed, and whether initial cost estimates are
valid.[9]

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[9] This analysis and record keeping would be enhanced if
the system is supported at division level with automated
equipment (a minicomputer).

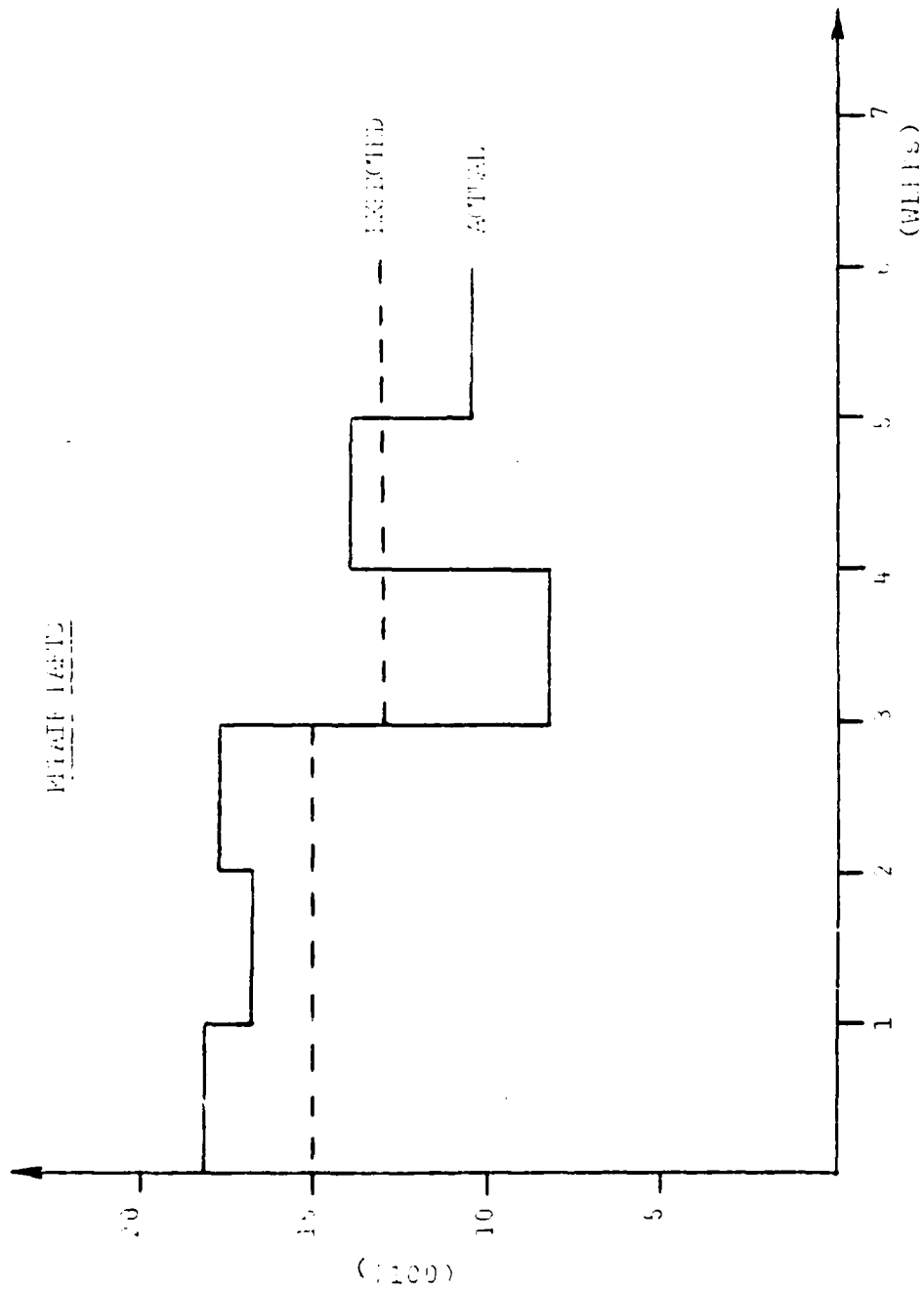PROJECT PRODUCTION

PHASE 1&2

EXPECTED

ACTUAL

(K$)

FIGURE 4-6

(MTHS)

Orderly maintenance of the above information is
critical to the usefulness of the system. Division personnel
should maintain the record file or section of fiscal informa-
tion on each battalion. The file can retain the battalion
master training schedule and charts depicted in Figure 4-8
showing each battalion's resource expenditures. Separate
master records showing division aggregate expenditures for
each resource should also be maintained. Battalion inputs
must continue to occur weekly, yet record updates and command
review of unit files need only be conducted on a biweekly
basis. The information should be presented to the division
commander only after review and rebuttal by battalion, brigade,
and assistant division commanders. This review ensures ex-
penditures are known within the command and allows for early
adjustment due to potential problems.

Two major issues surface at this point which
reinforce the importance of implementing such a fiscal control
system within a division. First, many designated training
activities such as REFORGER, joint service exercises, and
national training center operations are funded by several P2
Mission issues. These funds represent reimbursables to the
division for many activities generated at higher commands.
Capturing accurate costs is essential so these additional
funds can be obtained. Units should not allow their principal
training funds and resources to be depleted if accurate cost-
ing can provide additional authorized funding. Second, the

1.0

1.1

1.25   1.4   1.6

.45   2.8   2.5
.50   3.2   2.2
      3.6
      4.0   2.0

            1.8
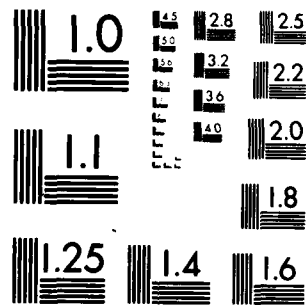
MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

concept of conserving battalion resources is encouraged.

A division resource reserve, composed of resources initially committed to battalions, should begin to develop. The continuous review encourages battalions to save since they will naturally attempt to maintain resource expenditures within projected estimates. The division can remove battalion commitment authority for designated resources as a surplus develops, but this action certainly ensures any savings will remain minimal. Further, reports may degenerate and poor communications may develop as battalions attempt to protect uncommitted resources. Another approach would be to establish a percentage (say, 10-20%) of any battalion savings which the division can reallocate if necessary. The remaining savings would always belong to the assigned battalion. The battalion incentive becomes authority to internally reallocate saved resources to new or additional training activities. Thus, savings would be encouraged but not contested by removing incentives.

A method used by some divisions to ensure that training resources are completely utilized at the end of a fiscal year is to schedule a final division exercise in early September. Instead of scheduling specific battalion resources to support an established division training activity, the exercise is tailored to utilize only remaining battalion resources. Adjustments and the level of participation are determined by the remaining resources of each battalion.

The exercise may vary from a complete division field exercise to selected unit participation, or to command group exercises (CPX's). Additional funds from the installation or MACOM could be requested if specific training benefits may be accomplished with limited additional funding. The key to this system is that resources are actively managed. Training activities are conducted according to resource availability, but the system retains an incentive for resource conservation.

To this point the discussion of all costing has addressed only first echelon costs, which are those costs generated directly by a unit in support of its own battalion activities. In a few units, those normally located in the division support command (DISCOM), costs are generated due to support demands created by non-parent battalion units. The division maintenance battalion, which receives work requests to fix vehicles for an infantry battalion, requires parts and manhours in addition to its own first echelon costs. These additional costs will be designated second echelon costs. Increased division training activity essentially increases division second echelon costs. The 25th Infantry Division found these costs followed a nearly linear relationship to total division fuel consumption. The more fuel used, the higher the second echelon costs, while lower fuel consumption lowers second echelon costs. The DISCOM units' first echelon cost figures were determined initially by using first echelon cost figures from like division units having

97

similar unit structures and training programs. These first
echelon costs were subtracted from the units' historical
total cost figures to produce its second echelon costs.
These second echelon costs were proportioned to the total
annual division fuel consumption to form the linear relation-
ship. If such a relationship exists, second echelon costs
could be managed by curtailing or increasing division fuel
consumption at specific time intervals. This relationship
provides a method to forecast these costs due to impending
division activity levels. Second echelon costs associated
with fuel consumption may not be the only method to address
these costs. Whatever ratio or method selected, the control
system must recognize these costs exist and plan for them in
developing budgets for DISCOM units.

    c. Division Budget Forecasting

        Battalions would program their own training costs
using estimates from either an internal fiscal control system
or information from the divisional data base. The completed
training schedule with an accompanying battalion bu⌐   is
returned to division for adjustment and approval. Upon
receipt of the newly approved commitment authority, the divi-
sion allocates funds and resources to its battalions. Each
battalion would review its planned schedule using the newly
approved resource ceilings. Battalion training activities
are adjusted as necessary. However, no designated activity
can be amended without division approval. Typically, only
battalion generated activities will require adjustment.

d. Who Becomes Responsible for the Division System?

The responsible agent for the management of training resources should be the division operations office (G-3). The division G-3 is responsible to the division commander for the operational control and training proficiency of units within the command. Since training resources support the accomplishment of division training, the fiscal management required for adequate resource management belongs in the same office. The division can establish a resource center to monitor the training resources of the division. Personnel tasking requirements, fuel, ammunition, range control, repair part costs, and training schedules would be the resources to be monitored. This section, staffed with appropriate operationally and financially skilled personnel, would maintain the division costing control system and prepare the command resource briefing files. The division G-3 section would develop and maintain the controls for resource management, freeing battalions to execute planned training activities.

C. BUDGET FORECASTING FOR HIGHER HEADQUARTERS

An important consideration for any fiscal control system implemented by a command is how it interfaces with budget forecasting requirements demanded each year. The proposed systems focus on small unit budget forecasting and resource expenditure. Equally as important as these two functions, the control system should support higher headquarters'

99

requests for budget information. As the battalion system supports the division system with needed data inputs, the division system should support installation and MACOM level budget submission requests. Interest does exist through the Army command structure, as well as in Congress, in associated costs to training activities. Past efforts have been to determine a measurement which illustrates Army efficiency and effectiveness in using provided resources.

The battalion training day is currently the control measure being utilized to establish resource management. It is a weak measurement, vague and ill defined, and fails to adequately represent training activities to any valid associated costs. The proposed division system refines the control measures to specific major training activities (variable costs) and garrison days (fixed costs), recognizing these activities are generally common to all Army units. Army headquarters or individual MACOM's could be given authority to determine and define the critical activities (variable costs) on which to record costs for budgetary submissions. Notable mission activities such as battalion ARTEP's, division command group exercises, joint service operations, brigade emergency deployment exercises, and battalion field exercises are but a few examples. Regardless, the training activities should be specific, identified, and defined, the number remaining less than ten. Too large of an activity sample creates micro management not necessary at this level.

Cost data supporting these activities should be in dollars, fuel consumption, and ammunition expenditures.

Installation garrison day costs could be compared across MACOM's while variable activity costs need to be closely examined to determine if they also have possible common cost relationships. This allows further analysis by costing designated activities across MACOM or Army commands. Care should be taken in examining these types of common costs for the duration of training activities conducted may significantly impact upon its associated costs. Three-day and twelve-day exercises may possibly have significantly different costs when averaged to a daily cost figure. A final benefit of the proposed control systems is the possible tie to the Battalion Training Model (BTM). If BTM proves to be useful, the division and battalion systems may serve as the cost data collection format requiring the variable costs collected to be the training activities monitored by BTM. As currently designed, BTM still requires cost data collected from some source external to the basic model.

Whatever Army command defines the training activity costs that are to be retained, it is imperative the battalion training day measurement be improved. A cost data base must be built by some form of internal fiscal control system, to retain and improve cost projections for planned training activities. Time remains the principle issue more than any one resource's availability or cost. Units have little time

to accomplish the numerous training activities now required
and desired. Battalions should not have to accomplish de-
tailed financial analyses. No command lower than division
should perform detailed financial analyses. Battalions must
be left to execute training; however, each should have a
simple internal fiscal control system to submit data to the
division system and for verification of division measure-
ments. The proposed systems are intended to provide needed
formats for divisions and battalions to accomplish fiscal
management of their training resources.

V. FIELD TEST OF COSTING MODEL

A. INTRODUCTION

The purpose of this chapter is to describe the findings
and observations from a limited field test of the costing
model proposed in Chapter IV. The test was conducted with
the aid of two light infantry battalions of the Seventh
Infantry Division at Fort Ord, California. The two battal-
ions volunteered to assist in the field test by providing
their unit's historical data on a weekly basis during the
period 2 August 1981 through 31 October 1981. Data input
were made utilizing the format specified in Figure 4-1.

B. SPECIAL CONDITIONS

The field test conducted for the costing model encoun-
tered other than ideal conditions for testing purposes.
Although specific conditions limited the results of the field
test, the sample data generated still appeared to be useful
in evaluating the operational characteristics of the costing
model. The special conditions which did influence the test
results were as follows:

1. The absence of mechanized infantry battalions at Fort
Ord prevented direct data comparisons to the Battalion Train-
ing Model. Since one of the possible uses of the proposed
model was as a costing methodology for BTM, the generated

sample data could not be immediately used for this purpose. Lacking mechanized infantry battalions at Fort Ord, two light infantry battalions were selected and tested instead. Unfortunately, the data generated from these two units were not completely characteristic of all operational light infantry battalions. This occurred because both units were currently participating in the Cohesion Operational Readiness Training (COHORT) program. This participation caused their daily personnel strengths during the test period to be only approximately 75 percent of their authorized strength levels.

2. Being only 91 days, the data collection period was insufficient to determine accurate cost estimates. Additionally, the data collected span two fiscal years, and are characteristic of the previously discussed end-of-year spending phenomena. Unit data were impacted by funding limitations and/or surpluses at the end of year FY 81, while new spending guidelines which began on 1 October 81 for FY 82 offered increased spending levels (ceilings) for the new fiscal year. As a result, only questionable confidence can be placed in the accuracy of the cost figures obtained.

3. During the test period, units conducted only one variable training activity that could be costed (battalion FTX). A longer test period would be needed to observe unit training in other variable activities.

C. DISCUSSION OF TEST RESULTS

The sample cost data collected for each battalion is presented as follows:[10]

1. Major Training Activity Calendars

    a. Battalion A: Figures 5-1 to 5-3

    b. Battalion B: Figures 5-10 to 5-12

2. Resource Consumption Charts

    a. Battalion A: Figures 5-4 to 5-6

    b. Battalion B: Figures 5-13 to 5-15

3. Unit Average Cost Diagrams

    a. Battalion A: Figures 5-7 to 5-9

    b. Battalion B: Figures 5-16 to 5-18

4. Computed Unit Cost Factors

Figure 5-19 illustrates the cost factors generated for the tested battalions on a cost/event record card. Due to the short period of evaluating the unit costs to specific training training activities, only a garrison cost (fixed cost) and a battalion FTX cost (variable cost) could be determined.

D. COMMENTS AND OBSERVATIONS

The following comments and observations describe the findings from the limited field test of the proposed costing model:

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[10] Sample data are presented as an example quarter period for a fiscal year.

1. Review of the cost figures generated from the field test illustrates wide cost variances between the two units. This occurs due to the short period of data collection, spending disruptions due to the end of one fiscal year and the beginning of another, and the activity levels conducted by each battalion. The activity level of Battalion A was 53 garrison days, 16 FTX days, and 22 non-training days. Battalion B used 64 garrison days, 3 FTX days, and 24 non-training days. The small sample of FTX days in Battalion B is not sufficient to accurately project valid cost figures and further explains the variances between the two units.

2. The impact of repair part costs attributable to a previous major training event is illustrated in Figure 5-16 for Battalion B. Within this sample size a more realistic repair part cost for garrison and field training days was determined by eliminating the large expense fluctuations and costing only the first six weeks of steady expenditures. This small subset shows steady weekly expenditures occurring during garrison days with large expenditures resulting after the unit FTX. These larger following costs are apparently attributable to the FTX. Using the first four weeks as a baseline garrison expense, and the follow-on increases over this baseline in the next two weeks as the FTX expense, the new repair part cost figures would be:

>   Garrison - $358.60 per day
>   FTX   - $1559. per day

These first few weeks appear to represent normal expenditure rates, while the following weeks appear influenced by end-of-year spending.

3. Another observation that was made centers on the category of costs labeled "Other ($)." These costs were composed of unit Self Service Supply Center (SSSC) costs and Class 2 and 4 monies. Although Class 2 and 4 monies originate from Procurement and P2 Base Operations funds, and not P2 Mission funds, they should be costed to provide a clear picture of total unit expenditures. The Class 2 and 4 expenditures were so large in relation to the SSSC expenditures that the SSSC costs had little effect upon the weekly aggregate expense. It appears unnecessary to isolate these "Other ($)'s" into both fixed and variable expenditures. These expenditures normally are not realized until a unit commander authorizes each one, often not specific to any unit activity. Since Class 2 and 4 monies support replacement of both installation and organizational property, isolation of costs to a fixed and variable cost would be difficult. As a result, these "Other ($)'s" could be expensed only as a fixed cost. All variable training days would be combined with normal garrison days to determine the fixed cost. Example costs for the tested units would be:

Battalion A: $24,639/69 days = $357.10 per day

Battalion B: $18,578/67 days = $277.20 per day

Thus, the Other ($) expenditures reflect a large amount of money that may not be adequately costed to specific training activities. These costs can still be determined on a fixed cost basis, but it further illustrates some of the difficulty in costing all expenses to training activities.

4. The model displayed that fuel expenditures closely follow conducted training activities, but also illustrated that any weak measurement control of the resources expended within a unit quickly would impair the validity of any generated cost figures. At present, the repair part costs need to be collected from weekly Prescribed Load Lists (PLL's) instead of the computer listings provided by a division TUFMIS account. The unit PLL records improved the identification of cost expenditures to the period of activity better than TUFMIS could provide. TUFMIS does not expense costs to the date the expenditure is submitted, but rather to the completed time the expenditure is processed. Its weekly cost listings do not ensure they reflect the true expenditures incurred during that period.

5. Unless accurate data are habitually collected and retained for each company, the company control system should not be used. Units would require an internal control system which would record all expenditures by individual company in the battalion. This would include all expenditures of repair parts, fuel, ammunition, SSSC, and Class 2 and 4 monies. Light infantry units found the battalion format sufficient.

Units like mechanized infantry, armor, air defense, or field artillery may still find the company format useful.

6. The internal resource controls of each battalion appeared to be adequate. Resource expenditures were recorded in a timely and accurate manner. However, the installation's fuel distribution plan, which allowed issue of fuels at five separate points, often created delays in data collection. Units normally could not determine fuel expenditures until the monthly report was prepared by the installation logistic agency and parent brigade headquarters. The fuel control procedure currently in use needs to become more responsive to the unit.

7. Finally, the time and human resources required to process the model's resource expenditure report was minimal. Assigned unit personnel were capable of recording the unit data without them becoming a new training distractor. The unit supply officer and support platoon leader became the principal agent responsible to process the information.

SAMPLE DATA FOR BATTALION A

Major Training Activity Calendars:

  Figure 5-1:   2 Aug 81 - 12 Sep 81

  Figure 5-2: 13 Sep 81 - 4 Oct 81

  Figure 5-3: 25 - 31 Oct 81

Resource Consumption Charts:

  Figure 5-4: Repair Parts

  Figure 5-5: Fuel

  Figure 5-6: Other $'s

Unit Average Cost Diagrams:

  Figure 5-7: Repair Parts

  Figure 5-8: Fuel

  Figure 5-9: Other $'s

MAJOR TRAINING ACTIVITY CALENDAR

UNIT __BATTALION A__   WEEK OF __2 Aug - 12 Sep 81__

	S	M	T	W	T	F	S
2-8	N			---(1/4) FTX---			N
9-15	N						N
16-22	N			---FTX---			
23-29	---FTX---					---FTX---	
30-5	---FTX---						N
6-12	N						N

N: Non Training Day

	UNIT	FUEL (M/D gal)		CL IX ($)	AMMO (*)	OTHER ($)
2-8	Bn A	0	0	2042	2860-5.56 3050-.45c	3612
9-15	"	0	0	1093	0	5546
16-22	"	843	390	61	0	754
23-29	"	742	608	*5297	15000-5.56 8200-7.62	134
30-5	"	676	430	1311	0	226
6-12	"	0	0	*9374	0	799

* A Battalion/Division Munition Code

FIGURE 5-1

111

MAJOR TRAINING ACTIVITY CALENDAR

UNIT __BATTALION A__   WEEK OF _13 Sep - 24 Oct 81_

	S	M	T	W	T		
13-19	N						N
20-26	N						N
27-3	N						N
4-10	N						N
11-17	N	N					N
18-24	N						N

N: Non Training Day

	UNIT	FUEL (M/D gal)		CL IX ($)	AMMO (*)	OTHER ($)
13-19	Bn A	0	0	5160	4015-5.56 2200-.45c	313
20-26	"	0	0	5345	6351-5.56 616-.45c	300
27-3	"	327	324	4972	0	2935
4-10	"	0	0	3548	0	3530
11-17	"	0	0	2572	1680-5.56	138
18-24	"	0	0	19271	3000-7.62	363

* A Battalion/Division Munition Code

FIGURE 5-2

MAJOR TRAINING ACTIVITY CALENDAR

UNIT __BATTALION A__   WEEK OF __25 - 31 Oct 81__

	S	M	T	W	T	F	S
25-31	N						

N: Non Training Day

	UNIT	FUEL (M/D gal)	CL IX ($)	AMMO (*)	OTHER ( )
25-31	Bn A	0 0	5472	0	2384

* A Battalion/Division Munition Code

FIGURE 5-3

113

RESOURCE CONSUMPTION CHART

70,518

(Weeks)

($10,000)

REPAIR PARTS

FIGURE 5-4

114

RESOURCE CONSUMPTION CHART

2,588
MOGAS

1,752
DIESEL

FUEL

($1,000)

(Weeks)

FIGURE 5-5

115

RESOURCE CONSUMPTION CHART

FIGURE 5-6

UNIT AVERAGE COST DIAGRAM

REPAIR PARTS

1927?

FIGURE 5-7

(Days)

91 84 77 70 63 56 49 42 35 28 21 14 7

($1000)

10 9 8 7 6 5 4 3 2 1

UNIT AVERAGE COST DIAGRAM

FUEL

MOGAS ——————
DIESEL ------------

FIGURE 5-8

(GALLONS)

118

UNIT AVERAGE COST DIAGRAM

OTHER $'s

NOTE: INCLUDES SSSC AND
CLASS 2 & 4 MONIES

FIGURE 5-9

119

SAMPLE DATA FOR BATTALION B

Major Training Activity Calendars:

    Figure 5-10:   2 Aug 81 - 12 Sep 81

    Figure 5-11: 13 Sep 81 - 4 Oct 81

    Figure 5-12: 25 - 31 Oct 81

Resource Consumption Charts:

    Figure 5-13: Repair Parts

    Figure 5-14: Fuel

    Figure 5-15: Other $'s

Unit Average Cost Diagrams:

    Figure 5-16: Repair Parts

    Figure 5-17: Fuel

    Figure 5-18: Other $'s

MAJOR TRAINING ACTIVITY CALENDAR

UNIT __BATTALION B__   WEEK OF __2 Aug – 12 Sep 81__

	S	M	T	W	T	F	S
2-8	N	(k) .50c Qual					N
9-15	N						N
16-22	N		(k) M16 Qual				N
23-29	----------	FTX	----------------				N
30-5	N						N
6-12	N	(k) M16 Qual					N

N: Non Training Day

	UNIT	FUEL (M/D gal)		CL IX ($)	AMMO (*)	OTHER (D)
2-8	Bn B	125	71	1996	600-.50c	61
9-15	"	278	112	1792	0	700
16-22	"	227	92	1692	1200-5.56,42-smk 3400-7.62,18-star	161
23-29	"	1035	638	1934	5000-5.56B,8-Dragon 12000-7.62B,6-TOW	193
30-5	"	605	449	*3537	0	145
6-12	"	74	63	4677	2400-5.56	356

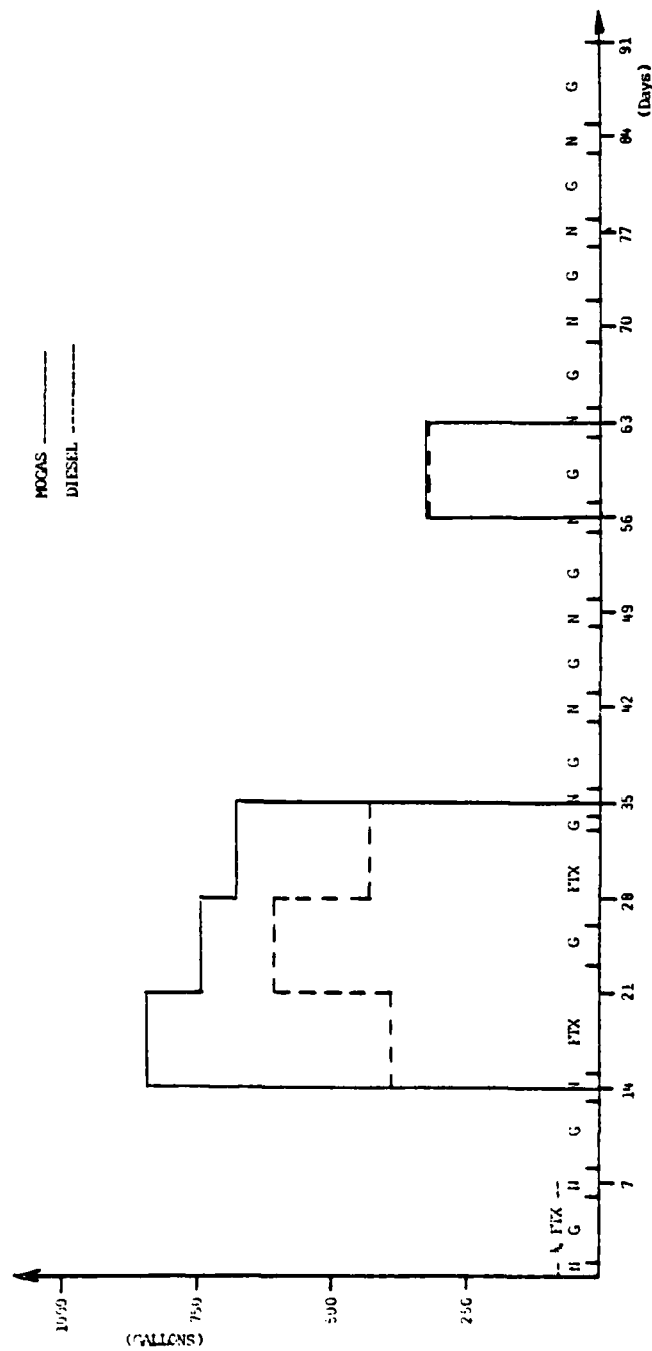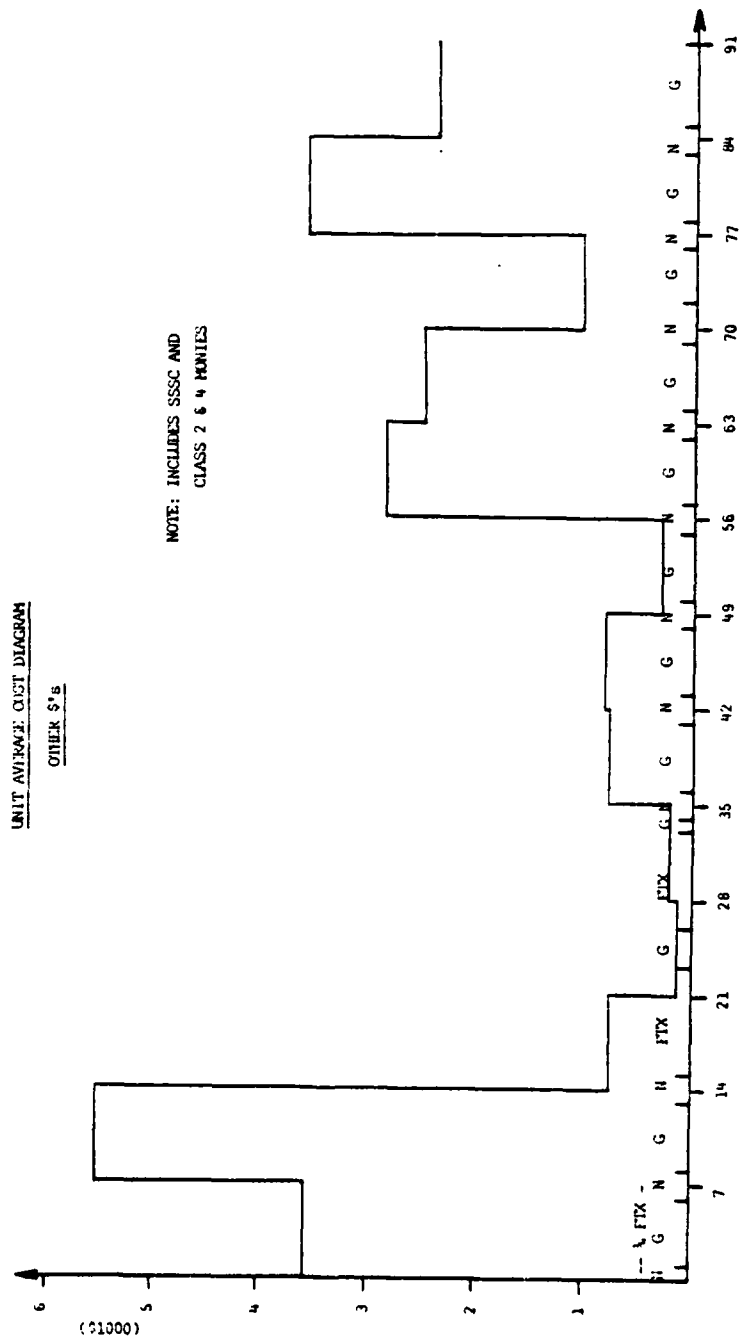* A Battalion/Division Munition Code

FIGURE 5-10

MAJOR TRAINING ACTIVITY CALENDAR

UNIT __BATTALION B__   WEEK OF __13 Sep - 24 Oct 91__

	S	M	T	W	T	F	S
13-19	N						N
20-26	N		(k) M16 Firing	(k) .45c Firing	(k) M203 Firing		N
27-3		(k) M16,M60 Firing		----------	(k) --- M16 Firing ---------		N
4-10	N						N
11-17	N						N
18-24	N						N

N: Non Training Day

	UNIT	FUEL (M/D gal)		CL IX ($)	AMMO (*)	OTHER (C)
13-19	Bn B	197	192	827	0	2044
20-26	"	194	98	154	1500-.45c 575-40mm,2000-5.56	1735
27-3	"	456	528	2010	10080-5.56 2000-7.62	243
4-10	"	171	205	798	0	1234
11-17	"	79	74	297	0	247
18-24	"	149	113	5011	0	3045

* A Battalion/Division Munition Code

FIGURE 5-11

122

MAJOR TRAINING ACTIVITY CALENDAR

UNIT __BATTALION B_____   WEEK OF __25 - 31 Oct 81_____

	S	M	T	W	T	F	S
25-31	N						N

N: Non Training Day

	UNIT	FUEL (M/D gal)		CL IX ($)	AMMO (*)	OTHER ($)
25-31	Bn B	122	93	5938	9000-5.56B,2-claym 1400-40mmB	1809

* A Battalion/Division Munition Code

FIGURE 5-12

RESOURCE CONSUMPTION CHART

REPAIR PARTS

FIGURE 5-13

RESOURCE CONSUMPTION CHART

3,701
MOGAS

2,718
DIESEL

4
($1,000)

3

2

1

1 2 3 4 5 6 7 8 9 10 11 12 13
(Weeks)

FUEL

FIGURE 5-14

125

RESOURCE CONSUMPTION CHART

18,578

15

10

5

($1,000)

1 2 3 4 5 6 7 8 9 10 11 12 13 (Weeks)

OTHER $'s

FIGURE 5-15

126

UNIT AVERAGE COST DIAGRAM

REPAIR PARTS

FIGURE 5-1b

127

UNIT AVERAGE COST DIAGRAM

FUEL

MOGAS ―――――
DIESEL ------------

(Gallons)

(Days)

FIGURE 5-17

128

UNIT AVERAGE COST DIAGRAM

OTHER $'s

NOTE: INCLUDES SSSC AND
CLASS 2 & 4 MONTHS

FIGURE 5-18

129

COST/EVENT RECORD CARD

FIXED COSTS

	FUEL (gal)			
	RPs $	MOGAS	DIESEL	OTHER $
Bn A	1244	14.3	12.4	432
Bn B	463	49.8	37.5	285

FTX VARIABLE COSTS

	FUEL (gal)			AMMUNITION (rd)						
	RPs $	MOGAS	DIESEL	5.56	5.56B	7.62	7.62B	TOW	DRAGON	OTHER $
Bn A	287	115	68.5	1116	0	513	0	0	0	108
Bn B	306	173	107	0	1667	0	4000	2.7	2	112

FIGURE 5-19

VI. SUMMARY AND CONCLUSIONS

A. SUMMARY

Initially, the reader was introduced to the growing
Congressional concern and interest in the Army's management
of its training resources. This thesis selected a specific
financial control structure, the Mechanized Battalion Cost
Equivalent, used by U.S. Army Forces Command, to examine
how budget forecasting and funding allocations are conducted
for its training resources. After the system's structure
and methodology were examined, two alternative courses of
action surfaced to help improve FORSCOM's training resource
management. One alternative is to retain the current MBCE
fund allocation methodology, concentrating on improving
the cost factors for better allocation equity. The second
choice would be to evolve the system into a new format which
directly budgets and allocates training resources by training
activities. Both approaches use a standardized common cost
methodology; however, the latter alternative appears to be
a preferable choice.

Should FORSCOM continue to use the MBCE method and only
upgrade the common cost factors utilized, training resource
management will not be substantially improved. Units are not
provided with a new standardized bookkeeping tool or format
that would improve their resource management skills or

their procedures. MBCE was developed to allocate training funds, yet it does not directly measure the training funded. With funding allocated by numbe.s and types of units, the key output measurement, activity level, is ignored. Additionally, the unit priority program established by the Army is not addressed. In the current format, all units receive the same proportioned funding regardless of priority standing. Finally, MBCE does not address environmental differences or local training facilities as variables for each funded installation. Simply stated, MBCE, as an initial costing methodology, needs to progress into a new format using training activities as the base factor.

The budgeting and allocation of training funds, using the common factor of training activities, may be an appropriate alternative. Units currently generate the required inputs, activities conducted with associated expenses. However, they habitually fail to efficiently retain this historical data. Improvements in historical data collection and its retention could be accomplished with usage of a standard Army-wide format. Collected data could be processed on prescribed schedules to a central collection facility. Using manual or automated processing equipment, unit training projections and their associated costs could be developed for a unit. The use of a central processing facility, enhanced by a minicomputer, maximizes control and operating efficiency while minimizing personnel and hardware costs. Such a process

allows for central management of resources at the division/ installation level where resources are dispersed (i.e., the responsibility level). Finally, units would not be hindered or distracted by lengthy budgetary problems and could concentrate on their principal mission in training their units to a specified level of combat readiness. Measurement should not only be in dollars, but also by activities accomplished.

Equally as important as selecting a data processing format is the need to define standard terms and rules for all Army commands. The most commonly misdefined term is a "battalion training day." Since each activity conducted provides a form of training proficiency regardless of its nature, a "battalion training day" should be replaced by terms which better clarify types of activities conducted. The terms might be variable (field), fixed (garrison), and non-training days. These terms should readily highlight the distinct incremental cost fluctuations between the types of activities. This would allow funding to be definable by an activity which is easily understood and measurable. Discretionary control over the unit training activity is maintained at unit level with the commander retaining selection of what specific training is to be accomplished within an activity day.

It is normally difficult to change a highly institutionalized system as described due to the nature and variety of its participants. An efficient and effective management of financial resources is critical not only for the FORSCOM

command but also for the Army. Dollars buy our people, equipment, and time. Adequate management of training funds has become paramount due to the high levels of personnel turbulance and weakening personnel skill levels. Resource management must begin where training is conducted, at unit level. Common costing techniques are needed to help Congress who appropriates monies and commanders who must train the force to effectively evaluate the efficiency of conducted operations. Effectiveness remains a subjective interpretation with mission accomplishment the primary goal.

Evaluating the financial structure and methodology utilized by FORSCOM is a first step in addressing the objective of fiscal resource responsibility. Improvements can and should be undertaken. With appropriate education and commitment of the participants, efficient fiscal resource management can be obtained.

The remaining paragraphs will summarize the general conclusions of the author and outline those areas considered appropriate for future study.

B. CONCLUSIONS

1. The current funding control system utilized by FORSCOM to forecast and allocate training resources is inadequate. It does not directly measure the training funded. As an initial costing methodology, it needs to measure training activities rather than type or number of units within a command.

2. Of the two principal Army-sponsored programs related to training resource management currently being developed, the Battalion Training Model appears to be the most promising aid for units. Although the Training Management Control System introduces enhanced computer operations down to battalion level, the system appears to be too time and human resource intensive for operational units. While BTM still must obtain a standard cost system for its projections, it establishes a method to forecast and schedule training activities without increasing the work or equipment for battalion-sized units.

3. The proposed internal control systems for battalions and divisions illustrated that historical unit cost data could be collected and retained with minimal impact upon battalion operations. As verified by the field test, the control system might serve as the costing system for the Battalion Training Model. It is capable of separating fixed, variable, and non-training day costs for BTM. However, BTM's current design to identify a weapon's range day cost should be considered only as an additiona. fixed cost and its ammunition expenditures should be monitored to each munition's ceiling. The model's format already allows for accounting of ammunition expended at range activities.

C. AREAS FOR FUTURE STUDY AND CONSIDERATION

1. It is recommended that an expanded field test of the proposed fiscal control system be conducted to determine if

the model can serve as the costing methodology for the Battalion Training Model. Selected units should exercise the proposed model and BTM. Once new cost figures are determined, future projections of resource expenditures could be compared to later actual costs. Should the projections prove reasonable, the system could serve as a format for budget forecasting and fund allocations.

2. A cost/benefit study should be conducted to determine if automated equipment might enhance the analysis and record keeping of the proposed division system.

3. Further study is needed to identify the costs incurred for training activities by support units. Major training activities often require additional logistic support from non-organic agencies or units. These add-on costs are needed to determine a true activity cost. The support costs might be reported to the division by the support agencies or to the using unit for their inclusion into an activity's cost.

The objectives of this study were to evaluate the internal fiscal control system used by U.S. Army Forces Command for training resource management and to explore the potential benefit of a simple, enhanced methodology for its improved management. The conclusions and recommendations provided herein support the need for an improved fiscal control system in training resource management. The proposed battalion/division system is one possible answer.

APPENDIX A

FORTY-TWO P2 MISSION FUND ISSUES[11]

Training of Individual/Teams

Training Through Company Level

Training Battalion or Task Force

Training Brigade or Division

Training Special Activity: Drum

Training Special Activity: JWC

Training Special Activity: NWTC

Training Special Activity: Amphibious

Training Special Activity: BCT Alaska

Training Schools and Facilities

Chemical Defense Equipment OTC

Chemical Defensive Equipment REC

Unit Exchange Program

Special Requirements

Tactical Intelligence Readiness Training (REDTRAIN)

Annual Service Practice

Training Simulator Operations and Maintenance

Army Marksmanship Program

Unit Activations UNAO

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[11]The above forty-two P2 mission fund issues were extracted from the FORSCOM Budget Guidance, Headquarters U.S. Army Forces Command, Fort McPherson, Georgia, FY 82-83.

Unit Activations UNAR

Unit Reorganizations UNAO

Unit Reorganizations UNAR

MTOE Modifications OTC

Support of New Tactical Systems REC

Headquarters FORSCOM

Headquarters SOUTHCOM

National Training Center

Flying Hour Program

JCS Exercises

RC Support

Training OPFOR

Rapid Reinforcement

ADP Mission Application Non CD

Golden Knights

Camouflage Screen Replacement

Force Sustainment

Cold Weather Clothing and Equipment

Tactical Exploitation of National Capabilities: (TENCAP)

Compat Vehical Maintenance

Missile Maintenance

Training Aids/Audio Visual

APPENDIX B

INSTALLATION TRAINING ISSUES AND
TRAINING EVENT CATEGORIES [12]

1. Training of Individuals, Squads and Crews Issue

This issue supports resources required to provide
training of individuals, squads, and crews in units. The
majority of individual training is conducted concurrently
with training of squad/crew and platoon. However, the
individual training accounted for in this issue is that
portion conducted separately from collective training. Re-
sources for this issue provide fuel, spare parts, travel,
transportation, and supplies associated with Soldier's Manual
training, weapons training, and training in general and spe-
cial knowledge subjects. Examples are: leadership develop-
ment training, administration of SQT, marksmanship training,
NBC training and testing, individual and crew-served weapons
qualification, general knowledge subject training, training
in specialized skills required by local conditions such as
cold weather indoctrination and squad/crew ARTEP tasks.

a. Individual Soldier's Manual/Aircrew Training
Manual Training Event Category. Examples: Soldier's Manual
training, EIB training, SQT training, and maintenance training.

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[12]The installation training issues and training event
categories were extracted from the Fort Ord FY 82 Command
Operating Budget, Department of the Army, Fort Ord, California,
10 March 1981.

139

b. Individual Weapons Training Event Category.
Examples: M16 field fire and record fire, LAW/VIPER famil-
iarization, pistol familiarization, and qualification and
DRAGON qualification.

c. Squad/Crew ARTEP Training Event Category.
Examples: squad/crew level ARTEP task training with inte-
grated Soldier's Manual training, infantry squad forced
march/live fire training and evaluation.

d. Crew-Served Weapons Training Event Category.
Examples: .50 cal familiarization, TOW qualification, M60
qualification, and mortar crew drill.

e. Flying Hour Program Aircrew Training Manual
Training Event Category. Days and dollars required to
provide individual proficiency (Aviation units only).

2. Training of Platoons and Companies Issue

This issue supports resources required to provide
ARTEP task, and deployment training to platoon and company-
sized units. Resources in this issue support training to the
basic proficiency levels for platoons and companies required
by ARTEP's, emergency deployment requirements and specific
contingency missions. Resources for this issue provide fuel,
spare parts, transportation, travel, and supplies to support
training.

a. Platoon and Company ARTEP Training and Evaluation
Event Category. Garrison and field ARTEP task training, ARTEP

140

evaluation for separate Det/Plt/Co, ARTEP evaluation for DS/GS units conducted in conjunction with a larger exercise.

b. Emergency Deployment Readiness Exercise (EDRE) Training for Detachments, Platoons and Companies Event Category. Examples: loadout training on cargo aircraft, rail cars, trucks, or navel ships; company-level emergency deployment readiness exercises, company-level unit readiness tests and alerts.

c. Company Team Live Fire Exercise Event Category. Defensive or offensive combined arms live fire exercise for a maneuver company augmented by an appropriate supporting slice of divisional combat and combat support elements.

d. Company Contingency Mission Training Event Category. Training for contingency missions that do not correlate directly with an ARTEP task. Examples: civil disturbance training, travel and TDY for reconnaissance contingency mission sites, training for defense of a sensitive government storage site.

e. Company Special Environment Training Event Category. Resources provide for training of squads, platoons, and companies in skills, tactics, and techniques required for operation in mountain, northern, jungle, desert, or amphibious environments.

f. Company Exchanges with Allied Nations Event Category. Resources provide for participation in formal or informal exchange programs for periodic exchanges of company

141

or smaller sized units between Allied Nations (e.g., U.S.-Canadian Exchange).

g. Annual Service Practice for Batteries Event Category. Annual air defense unit battery live firing.

h. Flying Hour Program Mission Support Training Event Category. Resources required for support of collective training at platoon/company/troop level (Aviation units only).

3. Training of Battalions Issue

Resources required to provide ARTEP, contingency mission and deployment training at battalion level. Resources in this issue support training to the basic proficiency levels required by ARTEP's, command post exercises, deployment requirements, and specific contingency missions. Resources in this issue provide fuel, spare parts, transportation, travel, and supplies to support training. Examples are: training in ARTEP tasks, ARTEP evaluations, EDRE's, CPX's, combined arms live fire exercises, training for specific contingency missions and training of battalion staffs using computer assisted war games.

a. Battalion ARTEP Training (FTX) Event Category. Resources provide for battalion-level training required to overcome deficiencies found on ARTEP evaluations. Battalion level training is defined as any training consisting of battalion level ARTEP tasks. Integrated individual and collective training of subordinate unit resources are accounted for as part of this event category.

b. Battalion CPX Event Category. Resources provide for battalion command and control training required to over- come deficiencies found on ARTEP evaluations or for leader training.

c. Battalion ARTEP Evaluation Event Training Cate- gory. Resources required for battalion external evaluations.

d. Emergency Deployment/Employment Readiness Exercise (EDRE) Training for Battalions Event Category. Battalion level static load training, emergency deployment readiness exercises, or unit readiness tests and alerts.

e. Battalion Combined Arms Live Fire Exercise Event Category. Defensive or offensive combined arms live fire exercise for a maneuver battalion augmented by an appropriate slice of divisional combat and combat support elements.

f. Special Environmental Training for Battalions Event Category. Resources provide for training of battalions in tactics and techniques required for operation in mountain, northern, jungle, desert, or amphibious environments.

g. Battalion Level Contingency Mission Training Event Category. Training for contingency missions that do not correlate directly with ARTEP tasks. Examples: civil disturbance training, local contingency missions such as support to postal operations, or disaster relief missions.

h. Annual Service Practice of Battalions Event Category. Annual air defense unit battalion live fire at an appropriate facility.

i. Flying Hour Program Mission Support Training Event Category. Resources provide for support of collective training at the battalion level (Aviation units only).

4. **Training of Brigades and Divisions Issue**

Resources in this issue provide for the deployment, command and control, and sustainment training to brigades, divisions and corps. Resources shown provide fuel, spare parts, transportation, travel, and supplies to support training to the basic proficiency levels required by war plans and specific contingency missions. Examples are: command post exercises at brigade, division and corps levels, exercises/ alerts and associated FTX's.

a. Brigade Command Post Exercise Event Category. Resources for field or garrison command post exercises or computer simulations (includes NCAIC exercises).

b. Division/Corps CPX Event Category. Resources for division or corps CPX's or computer simulations.

c. Brigade Emergency Deployment/Deployment Readiness Exercise (EDRE) Training Event Category. Examples: brigade level EDRE, unit readiness tests and alerts.

d. Brigade Field Training Exercise Event Category. Resources provide for brigade level field exercises with participation by brigade headquarters and headquarters company and an appropriate supporting slice of divisional combat support, combat service support elements, and at least one maneuver battalion.

e.   Division FTX Event Category. Resources provide for division level field exercises with participation by the division headquarters and headquarters company with organic combat, combat support and combat service support elements.

f.   Flying Hour Program Mission Support Training Event Category. Resources required to support collective training at division level (Aviation units only).

g.   Participation in Joint Exercises. Brigade or division participation in externally directed joint training or readiness exercises such as Balmain Tiger, Brim Frost and Team Spirit.

5.   Garrison Operations or Force Sustainment Issue

Garrison operations costs are defined as the P2 Mission costs incurred by units to exist every day of the year, in the force structure (administrative, maintenance and logistical costs), with the exception of units performing 24-hour operational missions. Garrison operations costs will continue to be incurred while the unit is conducting training and should be viewed as the cost of ownership of having the unit in the force structure while conducting no training. These resources are fixed costs. Examples are: Mission Self Service Supply Center supplies, all fuels and repair parts expended in support of administrative functions, post guard and funeral details.

a.   Support to Installations Event Category. Resources used for installation housekeeping functions and special require-ments. Examples: Post Guard, Funeral, or Police details,

grass cutting details, support provided local community parades and holiday celebrations. Combat Support and Combat Service Support units providing installation support must assess the training value obtained from providing support and determine to which funding issue the resources should be applied. Resources for installation tasking to support active component training activities (ARTEP evaluation, NCO academies, SQT evaluation) are not reported in this issue but in the appropriate training issue.

b. Garrison Operational Fixed Costs Event Category. These resources are the costs that are computed as the costs remaining after all support costs are identified. Examples are: mission SSSC supplies, all fuel and repair parts expended in support of administrative functions, and non-duty days (i.e., Saturday, Sunday, and holidays).

c. Training Schools and Facilities Event Category. Resources required for operation of NCOA in the conduct of the three primary and basic leadership courses: PNCOC, BNCOC and PLC. This event category provides the resources for foundation training for the noncommissioned officer education system (NCOES) and provides approximately half of the U.S. Army leadership instruction taught in a school environment for NCO's.

d. Training Simulator Operations and Maintenance Event Category. Resources required for operation and maintenance of any training simulator devices (pilot training

flight simulators, Redeye moving target simulators) utilized by P2 Mission forces.

e. ADP Mission Application Non-Contingency Deployment Event Category. Resources required for mission automated data processing support of post units. Resources for this issue provide for repair parts, supplies, travel, and transportation in support of ADP systems. Examples are: magnetic tapes, discs, rental of punch card machines, and equipment maintenance of government-owned ADPE (DISCOM only).

APPENDIX C

TRAINING BUDGET ESTIMATE TERMS[13]

Unit. Although it may be supporting other organizations--
battalion, separate company, or detachment responsible for
submitting a budget because it has a TOE/TDA mission with
its own independent organization.

Training Issue. Name of one of the 42 training issues which
must be addressed in a unit budget submission.

Location. The site/installation where a training event is
scheduled to take place.

Event Category. The training activities planned with the
training issue identified; e.g., weapons qualification.
Event categories will repeat within an issue if they occur
at more than one location.

Number of Days. The number of days the unit will be conduct-
ing the event in FY 8_. If the only part of a day or a portion
of the unit is involved in an event category, then a propor-
tion must be determined: e.g., 1 company of a battalion doing
an ARTEP for 3 days would be .25 x 3 days, or .75 days for
the battalion.

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[13]The training budget estimate terms were extracted from
the Fort Ord FY 82 Command Operating Budget, Department of the
Army, Fort Ord, California, 10 March 1981.

Travel/TDY (Personnel). Costs incurred to transport personnel to and from an event location by means not organic to the unit or the division; e.g., commercial bus, USAF aircraft, commercial air.

Transportation (Equipment). Costs incurred due to having equipment or "things" moved to and from a training site/installation; e.g., commercial trucking of heavy vehicles.

Contracts. Any costs for contractual services performed in support of training; e.g., chemical latrines.

Supplies/Equipment. Cost of repair parts and other technical supplies consumed in the operation and maintenance of equipment to support the training event category.

Total. The total dollar expenditure for each event category. The total at the bottom of the page should reflect the total number of days or dollars for each of the column headings.

APPENDIX D

## FORSCOM TRAINING INTENSITY PROJECTIONS[14]

TRAINING OVERVIEW

	COB Guidance	COB Submission	UFR Submission
Training of Individuals	43,282.6	51,744.7	16,014.8
Training thru Company Level	50,141.4	54,714.3	20,776.5
Training thru Battalion Level	42,237.8	43,393.6	19,375.9
Training Brigade/ Division	10,567.9	16,017.1	14,795.2
Force Sustainment	104,699.1	90,985.5	43,100.0
Training	250,928.8	256,855.2	114,112.4

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[14] The FORSCOM training intensity projections were borrowed from Headquarters, U.S. Army Forces Command, Deputy Chief of Staff for Operations and Training, Fort McPherson, Georgia 30330.

TRAINING INTENSITY

BE

BTDS/BE
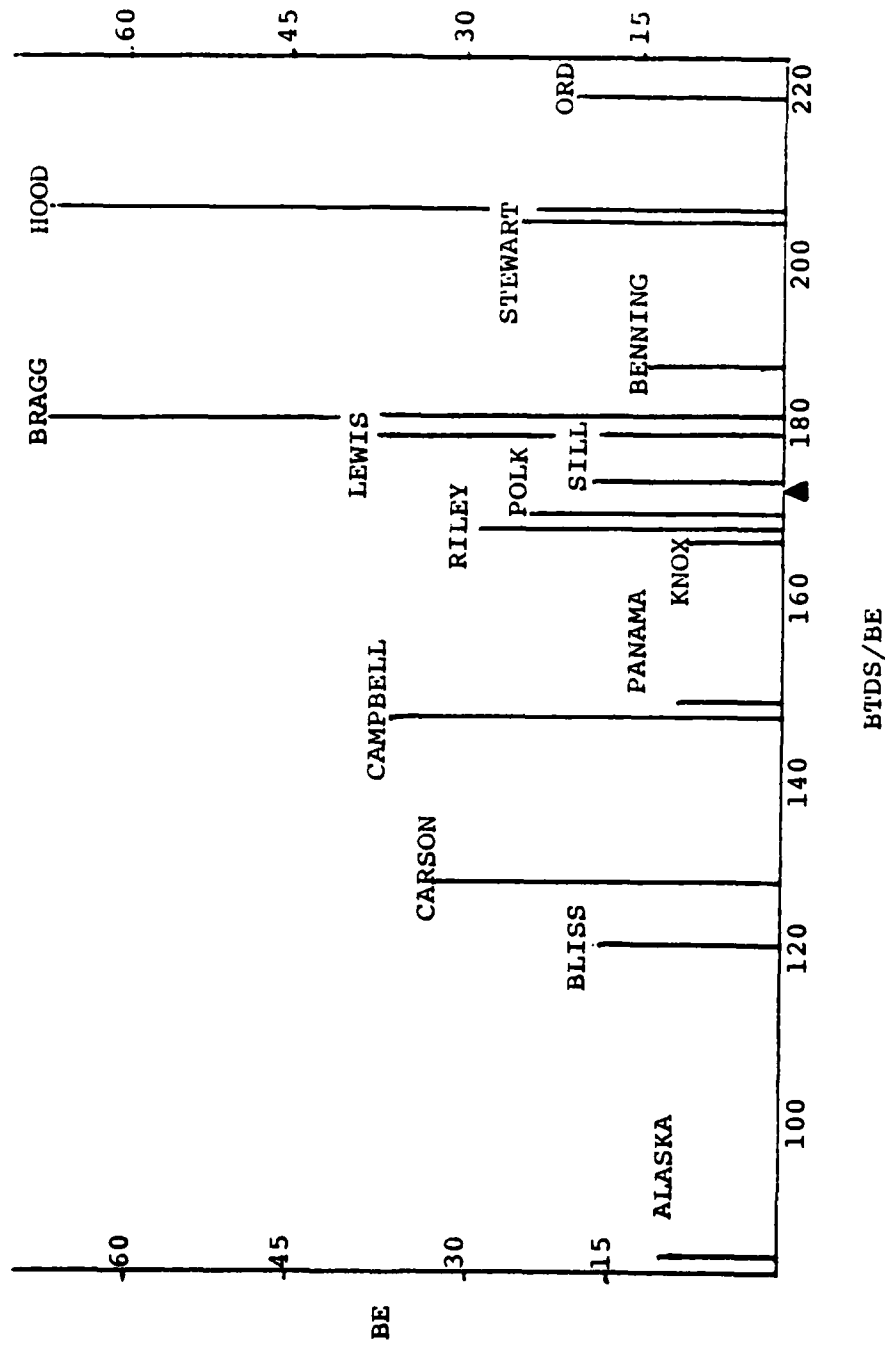
"TRAINING INTENSITY"

ALASKA		ORD
BLISS		HOOD
CARSON		STEWART
CAMPBELL	LESS	MORE
PANAMA	TRAINING ← → TRAINING	

POLK   BRAGG

LEWIS   RILEY

KNOX   BENNING

SILL

ARE PLANNING ABOUT THE

SAME LEVEL OF TRAINING

INSTALLATION
BUDGET
&
TRAINING
PLANNING
SYSTEM

INDIV
PLT/CO
BN
BDE
SUSTAIN

$251 MIL

76,000

BIDS *
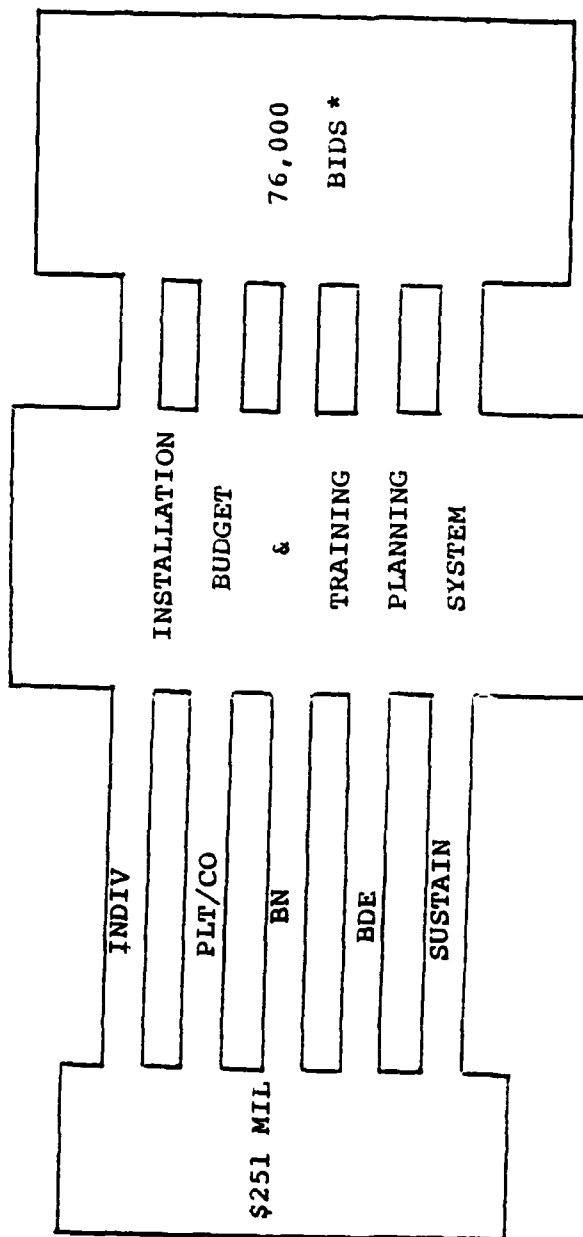
* AND WE WANT ABOUT 40,000 MORE!

UFR's

Installation	Total UFR
FT BRAGG	$41.1 MIL
FT HOOD	16.1 MIL
FT STEWART	11.1 MIL
FT LEWIS	6.3 MIL
FT POLK	6.1 MIL
FT BLISS	5.4 MIL
FT CAMPBELL	5.0 MIL
FT ORD	3.9 MIL
ALASKA	2.3 MIL
FT BENNING	1.4 MIL
FT RILEY	1.3 MIL
FT KNOX	1.0 MIL
PANAMA	1.0 MIL
FT SILL	1.0 MIL
FT CARSON	.3 MIL

UFR RELATIVE REQUIREMENTS

Installation	$/BN
FT BRAGG	$614K
FT STEWART	437K
FT BLISS	320K
ALASKA	289K
FT POLK	262K
FT HOOD	241K
FT LEWIS	173K
FT ORD	169K
FT CAMPBELL	137K
FT BENNING	116K
PANAMA	111K
FT KNOX	95K
FT SILL	53K
FT RILEY	47K
FT CARSON	9K

TRAINING COST

Thousand $/BTD

155
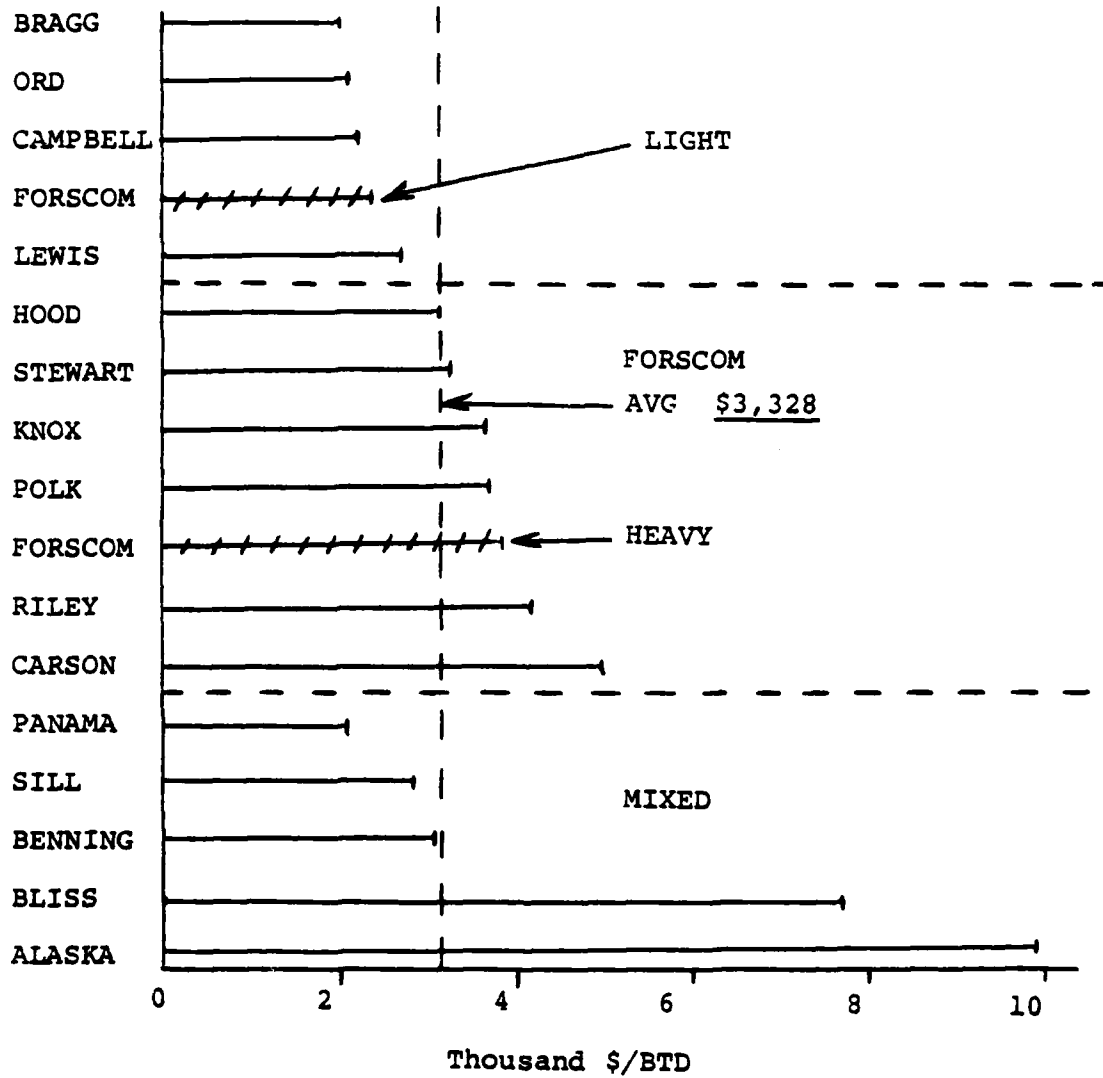
FINANCED BTD's

MANEUVER UNITS

	81 BTDS		82 BTDS	DAYS CHANGE	% CHANGE
82 AD	4637	SAME	4637	0	0
101 AD		?	4641	?	?
9 ID	4999	+	5494	+495	10%
7 ID	5346	−	5270	−76	1%
1ST CAV	5348	+	5352	+4	+
2D AR	5936	−	5678	−258	−4%
24 ID	4481	−	4464	−17	−
5 ID	4393.5	−	3321.82	−1071	−24%
4 ID	2975	+	3305.5	+330	+11%
1 (−) ID	4217	+	4236	+19	+
194 BDE	1652	+	2089	+437	+26%
197 BDE	1173	SAME	1173	−	−
172 BDE	519	+	684	+165	+31%
193 BDE	1285	+	1650	+365	+28%
3 ACR	192	+	263	+71	+36%
6 CBAC	832	−	831	−1	−

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